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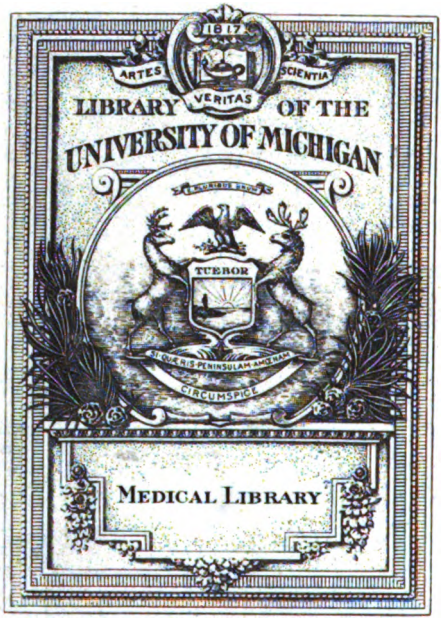

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TRANSACTIONS

OF THE

MEDICAL ASSOCIATION

OF THE

STATE OF ALABAMA,

28th Session, 1875.

Montgomery, April 13th, 14th and 15th, 1875.

MONTGOMERY, ALA.:
BARRETT & BROWN, STEAM PRINTERS AND BOOK BINDERS.
1875.

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PREFACE.

The Committee on Publication deem it proper to state that the favorable reception which the Association and the Medical Press have been pleased to accord to the last volume of Transactions, has determined them to intrust the printing again to Messrs. Barrett & Brown, of Montgomery.

The Committee feel secure in promising that the typography of this volume will be equal to that of the last, and the hope is encouraged that in mechanical execution the Alabama Transactions will compare favorably with similar publications of other States.

The Committee, in conclusion, advertise to purchase a complete set of the Transactions of the Medical Association of the State of Alabama from 1847 to 1867 inclusive.

Respectfully submitted.

B. H. Riggs,
J. B. Gaston,
R. F. Michel,
Publishing Committee.

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OFFICERS, 1875.

28th SESSION.

PRESIDENT.

JOHN J. DEMENT.....Huntsville.

VICE-PRESIDENTS.

PETER BRYCE.....Tuscaloosa.
FRANCIS M. PETERSON.....Greensboro.

SECRETARY.

BENJAMIN HOGAN RIGGS.....Selma.

TREASURER.

WALTER CLARK JACKSON.....Montgomery.

BOARD OF CENSORS.

JEROME COCHRAN, Senior Censor.....Mobile.
JAS. GUILD.....Tuscaloosa.
GEO. ERNEST KUMPE.....Leighton.
NICHOLAS DAVIS RICHARDSON.....Athens.
WM. H. ANDERSON.....Mobile.

COMMITTEE ON PUBLIC HEALTH.

GEORGE A. KETCHUM.....Mobile.
EDWARD A. SEMPLE.....Montgomery.
EDMUND P. GAINES.....Mobile.
CLIFFORD D. PARKE.....Selma.
S. D. SEELYE.....Montgomery.

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HOUSE OF COUNSELLORS,

APRIL, 1874.

---

1. William H. Anderson.....Mobile.
2. William H. Abernethy.....Allenton.
3. James S. Bankson.....Stevenson.
4. William D. Bizzell.....Mobile.
5. Peter Bryce.....Tuscaloosa.
6. Jno. P. Burke.....Meridionville.
7. Jerome Cochran.....Mobile.
8. Ruffin Coleman.....Athens.
9. William C. Cross.....Cherokee.
10. Calvin A. Crow.....Moulton.
11. John J. Dement.....Huntsville.
12. Louis W. Desprez.....Russellville.
13. William Desprez.....Tuscumbia.
14. Edmond H. Founier.....Mobile.
15. Edmund P. Gaines..... "
16. John B. Gaston.....Montgomery.
17. John T. Gilmore.....Mobile.
18. J. M. Godfrey.....Sumterville.
19. Rhett Goode.....Mobile.
20. James Guild.....Tuscaloosa.
21. Joseph Harrison.....Greenville.
22. W. W. Harrison.....Talladega.
23. Albert T. Henley.....Macon Station.
24. William Hester.....Tuscaloosa.
25. S. M. Hill.....Carrollton.
26. Samuel M. Hogan.....Union Springs.
27. Richard Inge.....Greensboro.

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28. Robert D. Jackson.....Selma.
29. Walter C. Jackson.....Montgomery.
30. John David Johnston.....Sumterville.
31. William A. Johnson.....Uniontown.
32. William H. Johnston.....Selma.
33. Mortimer H. Jordan.....Birmingham.
34. George A. Ketchum.....Mobile.
35. George E. Kumpe.....Leighton.
36. Caleb B. Lampley.....Greenville.
37. John Little, Jr.....Tuscaloosa.
38. Edward D. McDaniel.....Camden.
39. Adam A. McKittrick.....Evergreen.
40. Edmunds Mason.....Wetumpka.
41. Thos. A. Means.....Montgomery.
42. R. Fraser Michel..... "
43. Goronwy Owen.....Mobile.
44. Clifford D. Parke.....Selma.
45. Francis M. Peterson.....Greensboro.
46. Newton D. Phillips.....Tallassee.
47. R. B. Porter.....Courtland.
48. Augustus J. Reese.....Mobile.
49. Benjamin H. Riggs.....Selma.
50. Frank A. Ross.....Mobile.
51. Louis H. Sadler.....Leighton.
52. J. T. Searcy.....Tuscaloosa.
53. S. D. Seelye.....Montgomery.
54. Edward A. Semple..... "
55. S. D. Smith.....Demopolis.
56. Samuel P. Smith.....Prattville.
57. Caleb Toxey.....Mobile.
58. Job S. Weatherly.....Montgomery.
59. Robert D. Webb.....Livingston.
60. W. W. Wilkerson.....Marion.

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LIST OF DELEGATES

TO THE

AMERICAN MEDICAL ASSOCIATION.

JEROME COCHRAN, M. D.
CALEB TOXEY, M. D.
C. C. SHERARD, M. D.
GEO. A. KETCHUM, M. D.
J. S. WEATHERLY, M. D.
R. F. MICHEL, M. D.
E. A. SEMPLE, M. D.
JNO. P. FURNISS, M. D.
PETER BRYCE, M. D.
E. MASON, M. D.
GEO. E. KUMPE, M. D.
RUFFIN COLEMAN, M. D.
J. R. HOFFMAN, M. D.
J. S. BANKSON, M. D.
A. T. PEARSALL, M. D.

E. A. SEMPLE, Delegate to the Medical Association of the State of Virginia, October 20th, 1875.

LIST OF CORRESPONDENTS.

GRATZ A. MOSES, St. Louis, Mo.
JOHN S. LYNCH, Baltimore, M. D.
THOS. O. SUMMERS, JR., Nashville, Tenn.

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REPORTERS FOR 1876.

Induction of Premature Labor—Dr. W. H. JOHNSTON, Selma.
Value of Health to the State—Dr. GEO. A. KETCHUM, Mobile.
Necrology for 1875—Dr. J. T. SEARCY, Tuscaloosa.
Treatment of Chronic Otitis—Dr. R. INGE, Greensboro.
Treatment of Urethral Stricture—Dr. JNO. P. FURNISS, Selma.
Acute Mania—Dr. R. P. HUGER, Tuscaloosa.
Artificial Respiration—Dr. E. D. McDANIEL, Camden.
Recent Progress in Obstetrics—Dr. F. M. PETERSON, Greensboro.
The Present Status of Electricity in Medicine—Dr. EDMOND H. FOURNIER, Mobile.
Recent Physiological Researches and their Relations to Therapeutics—Dr. WM. H. ANDERSON, Mobile.
Public Hygiene—Dr. JEROME COCHRAN, Mobile.
Topography and Climatology of North Alabama—Dr. LOUIS H. SADLER, Leighton.
Hæmorrhagic Malarial Fever—Dr. ROBERT D. WEBB, Livingston.
Malignant Diseases—Dr. S. D. SEELYE, Montgomery.
The Practice of Medicine in its Relations to other Branches of Business and to Society—Dr. ROBERT S. SEARCY, Decatur.
Insanity in Alabama and the Need of Additional Hospital Treatment by the State—Dr. JOHN LITTLE, Tuscaloosa.
Surgery—Dr. J. F. HEUSTIS, Mobile.

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MINUTES OF PROCEEDINGS

OF THE

MEDICAL ASSOCIATION

OF THE STATE OF ALABAMA.

TWENTY-EIGHTH ANNUAL SESSION,

Held in Montgomery, April 13th, 14th, and 15th, 1875.

FIRST DAY—Tuesday, April 13th.

The Association assembled in the Hall of the Medical and Surgical Society of Montgomery. The following Counsellors and Delegates appeared and registered:

COUNSELLORS.

JEROME COCHRAN, CALEB TOXEY, EDMUND P. GAINES, GEO. A. KETCHUM, and FRANK A. ROSS, of Mobile; J. S. BANKSON, of Stevenson; JOHN J. DEMENT, of Huntsville; JNO. LITTLE, JR., and JAS. GUILD, of Tuscaloosa; R. F. MICHEL, EDWARD A. SEMPLE, W. C. JACKSON, and J. S. WEATHERLY, of Montgomery; L. E. STARR, of Bibb; F. M. PETERSON, of Greensboro; SAMUEL P. SMITH, of Prattville; BENJ. H. RIGGS, of Selma; JAS. GILLESPIE, of Abbeville; and GEO. E. KUMPE, of Leighton—18 Counsellors.

DELEGATES.

Selma Medical Society (Dallas County)—Clifford D. Parke, Wm. H. Johnston, and Jno. P. Furniss.

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Medical and Surgical Society of Montgomery—T. A. Means, N. D. Phillips, J. H. Blue, James Douglass, S. D. Seelye, B. R. Jones, and J. B. Gaston.

Madison County Medical Society—J. W. Barclay, and George R. Sullivan.

Limestone County Medical Society—Ruffin Coleman.

Perry County Medical Society—W. A. Bradfield, and W. W. Wilkerson.

Elmore County Medical Society—M. H. Crawford.

North Alabama Medical Society—R. B. Porter.

Hale County Medical Society—Richard Inge, and Albert T. Henly.

Marengo County Medical Society—S. D. Smith.

Butler County Medical Society—C. B. Lampley, and Joseph Harrison.

Wilcox County Medical Society—W. H. Abernethy.

Autauga County Medical Society—A. S. McKeithen, and T. G. Howard.

Bullock County Medical Society—J. M. Hogan.—13 Societies, and 26 Delegates.

There being found a constitutional quorum present, the Association was called to order at 12 M., by the President, J. S. Weatherly, M. D., of Montgomery.

There were present Ex-Presidents R. F. Michel, M. D., of Montgomery, George E. Kumpe, M. D., of Lighton, and Geo. A. Ketchum, of Mobile.

Of the Board of Censors, there were present Jerome Cochran, Senior Censor, R. F. Michel, M. D., Jas. Guild, M. D., and Geo. E. Kumpe, M. D. N. D. Richardson, M. D., was absent from the State.

Exercises were begun with prayer by the Rev. Horace Stringfellow, D. D., Rector of St. John's Church (Episcopal.)

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W. C. Jackson, M. D., Chairman of the Committee of Arrangements of the Medical and Surgical Society of Montgomery, then delivered the following address of welcome:

Mr. President, and Gentlemen of the
Medical Association of the State of Alabama:

To my lot as the official head of the Committee of Arrangements of this city, has fallen the pleasure and honor of welcoming you to our midst. We may justly congratulate ourselves and you upon the growing interest manifested by all of our people in your deliberations, and the desire everywhere expressed to co-operate in every measure for the advancement and efficiency of our noble profession.

The spirit which gave you a glad welcome on your first assembling here five years ago, has increased with a steady growth. You will discover no abatement of it, and the only difference, if difference there be, between your welcome then and now, will show itself in greater efforts to make your stay among us as pleasurable to you as it is honoring to us.

Each year the Profession has grown nearer the people; each year the people have instinctively drawn closer to the Profession.

To-day our calling has more hearty co-operation and good will from the entire body of our people than any other profession save only the Christian Ministry.

The time was, and not far distant in the past, when the people looked upon physicians with an awe and dread somewhat akin to the feeling of the despairing patient, who gazed on the knife to which he was forced to submit as a last resort to avoid the hardly less dreaded alternative of death.

His efforts were clogged by the superstition of the multitude, and his kindly healing retarded by vague and mysterious doubts as to the efficacy of his remedies, and skepticism as to the power of the human mind to grasp and grapple with the diseases of the human body. Happily that day is past; the physician is no longer the attendant only of the sick, but the friend, companion and adviser of the well—counselling with him against disease, and forming plans for improving and strengthening the well man against the chance diseases of climate, constitution, habits and surrounding circumstances.

There is no more significant sign of the healthy progress of civilization among us, than the intelligent trust which not only individuals but communities place in the Medical Profession, not only in the course of disease but in the direction of the means for the preservation of the health of States and communities.

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With the great increase of commerce, the multiplied and easy means of communication between distant countries, the concentration and increase of population, new diseases and epidemics wholly foreign to our people have been wafted to our shores.

Each year these scourges make great ravages upon our borders, sometimes lingering on our sea-coast, and at other times attacking the very heart of territory and population. Against these invaders, more terrible than "an army with banners," our State and community look to you for protection.

Surely none could be leaders in a nobler cause, nor wish for grander fields in which to win lasting laurels. In this warfare in which every creed, sect and nationality may join hands, you may not win the highest renown which gilds the name of the conqueror or slaughterer of his fellow men, but may win and wear the better crown which here and hereafter belongs to those who unselfishly strive to save their fellow man from suffering, and to soothe the ills to which he is heir.

The people of this city look upon you as the allies and counsellors of those who are entrusted with their defence against the ravages of disease and epidemics. Your brethren greet you as their comrades and peers in a noble calling, from whom they can gather instruction and wisdom. The State itself has posted you as sentinels to watch for her welfare, with full trust and confidence that in your keeping it will not suffer.

With these things in view, with the honor won in the past, still in fresh memory; the possibilities and glories of the future in full view, and the auspicious events which brighten the present, why need I detain you longer with words of greeting, when the eyes and hearts of all bespeak in it signs so unmistakable.

On behalf of the Medical and Surgical Society of Montgomery, I bid you a hearty and cordial welcome, and wish for each and every one a pleasant sojourn in our midst, and for the Medical Association of the State of Alabama a wise, harmonious, and successful session.

The next in order was the annual address of the President. The Chairman of the Committee of Arrangements offered the following resolution:

Resolved, That, owing to the absence in Europe of the Orator of this Session, Dr. Thos. O. Summers, Jr., and the inability of the Alternate Orator, Dr. William A. Johnson, of Uniontown, to be present, the order of business be suspended so as to allow the President's annual address to be delivered in public to-night at eight o'clock, in the U. S. Court Room.

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Dr. Cochran favored the resolution under the peculiar circumstances, and as the address was on a subject of public importance—the new Board of Health feature—but did not wish it made a precedent.

The motion was adopted.

The Committee of Arrangements then announced that the hours of session would be from 10½ A. M. to 1½ P. M., and from 2½ P. M. to 5 P. M. daily.

Dr. Weatherly, President of the Association, then supplemented the remarks of welcome of the Committee of Arrangements in the following neat address:

GENTLEMEN—I also take great pleasure in extending a cordial welcome to you here to-day. I am sure that it augurs great good when so many of the leading men of the Profession have thought it a duty to leave home and business for a little while, that they might contribute their quota of information for the common good. As for myself, I believe I can say with truth, that no event of my life is regarded by me with more pride and pleasure, than my selection to preside over such a body of men as I see assembled in this hall.

I am sure that our deliberations will be productive of much benefit, both to the Profession and to the citizens of this State. Allow me to crave your kind indulgence in advance for all of my short comings as your presiding officer. If I fail to do my full duty, I beg that you will attribute it to an error of head rather than of heart.

Our Orator not being present, you have just voted that my inaugural address shall be delivered to-night. I will therefore not detain you longer, except to again offer my most profound thanks that so many of you have thought proper to be here to-day.

Dr. R. F. Michel now announced the arrival of Drs. A. W. Griggs and W. S. Kendrick, as Delegates from the Medical Association of Georgia to this Association, they having presented their credentials as such.

Drs. Michel and Ketchum were appointed a Committee to introduce the gentlemen to the President, who welcomed

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them in appropriate remarks and introduced them to the Association.

The regular order of business was then resumed.

The minutes of the last session were then approved.

The Secretary then read his annual report, which was received and filed.

REPORT OF THE SECRETARY.

To the President of the Medical Association of the State of Alabama:

It is my duty again to submit my annual report as your Secretary.

During the year many valuable books and papers have come into my possession through my official position, to hold in trust for the Association, being principally reports of other State Associations, for our interchange of Transactions have been general—Reports of Boards of Health, notably those of Massachusetts, Philadelphia, Louisiana, and Michigan, and some valuable papers from Jno. M. Woodworth, Supervising Surgeon of the United States Marine Hospital Service, Washington, D. C. In a few years, at the present rate of increase of these valuable contributions to the Medical and Surgical knowledge of the day, we will accumulate a useful and extensive library.

The minutes of the proceedings of the session of 1874, were carefully kept by me and printed without essential alteration, being confirmed by my associates of the Publishing Committee; there was more reported than is prescribed by parliamentary usage as the duty of a Secretary, but your Secretary was actuated in so doing by a desire merely of culling truths and perpetuating useful facts. There is a typographical error on page 52, the only one that I have been able to detect, for Dr. A. D. Richardson, of Athens, Limestone county, it should be Dr. N. D. Richardson. During the year I have written a great many letters in the interest and on the business of the Association; I have made it a duty to reply promptly to all letters received by me, and give such information in regard to the machinery and objects of the Association as I could. I have endeavored to correspond with the Secretaries of the Associations of Virginia, North and South Carolina, Georgia, Tennessee, and Mississippi, with success except as to Tennessee and Georgia; I have not yet heard from these latter, my object in doing so was not only to beget friendly relations between neighboring Associations, one in interests and memories, but to induce an interchange of delegates. As a result the Virginia Medical Society appointed Dr. W. F. Barr, of Abingdon, to meet us as her Representa-

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tive at this session; and South Carolina hopes to be represented by Dr. Middleton Michel, of Charleston; Dr. R. A. New, of Raymond, Secretary of the Mississippi Society, expressed a desire to meet us on this occasion. I would suggest the regular appointment by this Association of delegates, each year, to these neighboring sister Organizations, in connection with the appointment of delegates to the American Medical Association.

The Board of Censors, at the last session of the Association, were intrusted "with the duty of obtaining a suitable seal for this Association," which I presume will be reported on in due course; it is important to have one.

The Secretary issued one hundred copies of a printed circular of information to the members of the Association and County Societies. He sent one to each officer of the Association, one to every Counsellor, and one to each President and Secretary of County Societies. It contained an announcement of our present session; the privileges and duties of County Societies under the Constitution; a resolution with regard to the election of new Counsellors adopted by the House of Counsellors at the last session; and the rates of fare of ten principal lines of railway in the State. Most of the railroad superintendents deserve the thanks of the Association for their courteous compliance with my request for excursion rates for our delegates; some felt called upon to decline to issue such tickets for conventions held off of their lines of road, and did so.

Immediately after the adjournment of this session it will be my duty to notify, in my official capacity, the permanent Secretary of the American Medical Association of those subordinate Societies recognized by this Association, as by the law of that body delegates thereto "shall receive their appointment from permanently organized State Medical Societies, and such County and District Medical Societies as are recognized by representation in their respective State Societies, and from the Medical Department of the Army and Navy of the United States," and no others.

I have prepared a correct roll of Counsellors for the current session of that branch of the Association, which is herewith submitted. There were some omissions from the published list of the members of the House of Counsellors in the volume of Transactions for 1874. The House elected to membership at the Selma session, Drs. Starr, Richardson, Toole, Gillespie, Franklin, and Ruffin, and instructed me to formally notify them of their selection, and "that all of them who give their consent to accept the position, with its duties and obligations, and make payment of the fee, shall be placed upon the roll of Counsellors." I discharged this duty, and directed them to send their fees to the Treasurer. Owing to the delay incident to this course, I determined mere-

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ly to publish as the House of Counsellors the "revised roll" of the last session. There are really now 50 Counsellors instead of 45.

Dr. B. W. Toole, of Talladega, did not feel that he was able to assume the duties and obligations of a Counsellor of this Association, among other reasons, on account of infirm health, and therefore declined the honor. I herewith submit his letter.

As ex-officio Chairman of your Publishing Committee, it is my duty to report upon the publication of the volume of Transactions for 1874; and I cannot do better than repeat here the preface to that volume, written by another: "It is with no little pleasure, mingled with pride, that the Publishing Committee hand to the members of the Medical Association of the State of Alabama its printed Transactions for the year 1874. Believing that the work could be creditably performed in the capital of the State, they cheerfully committed its execution to the care of Messrs. Barrett & Brown, one of the largest and most competent publishing houses in Alabama. The manner in which they have performed their part we hope will meet with your approbation. Your committee deemed it necessary to leave out a list of members of the County Societies, in consequence of the fact that so large a space might be occupied more profitably by other matter. It would have added very much to the value and appearance of the volume to have procured all the maps, lithographs, and wood-cuts of the various papers and reports, but going to press on the 10th of July, no time was afforded for the proper execution of this portion of the book.

Your Committee regret that Dr. Osborn's paper was not forwarded for publication.

With the earnest hope that the volume will fully realize your expectations,

We are, very respectfully,

Your obedient servants,

B. H. Riggs,
J. B. Gaston,
R. F. Michel,
Publishing Committee.

Right here it is proper for me to say that I recall remarks made last year, so far as my present associates are concerned, on the resolution appointing two members on the committee with myself. I must say that no chairman was ever more efficiently and agreeably aided than I was by my two confreres of the Publishing Committee. In fact the Association largely owes the exceedingly creditable appearance of the volume of Transactions of 1874, to the zeal and fidelity of her sons, Drs. J. B. Gaston, and R. F. Michel, aided by our

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President, Dr. J. S. Weatherly, for these gentlemen attended to correcting the proof, superintended the printing as it went through the press, and afterwards attended the mailing. The Association owes them a debt of thanks; they certainly have mine.

We printed 300 copies of 428 pages each, at the moderate cost of $572 70.

They were sent to their destinations by express on account of their size and value.

Two copies were sent to every Counsellor, one to every member of County Societies, who had paid the annual fee of one dollar; one copy to the Secretary of every State Association whose address I had; one to every important Board of Health; one to every reputable Medical Journal; and one each to the Secretary of the American Medical Association, the Secretary of the Smithsonian Institute, the Surgeon General of the United States, and the Supervising Surgeon of the United States Marine Hospital Service.

With this liberal distribution, and the demand thus created, the unusually large number of copies was soon exhausted.

I may be permitted to say if the printed volume of proceedings of a Medical Association be, as it certainly is, an index of professional zeal, scholastic attainments and professional acquirements, your last volume will give you, individually and collectively, a high position abroad. It has certainly received at the hands of critics of ability and discrimination, both in our ablest medical periodicals and in private letters to your Secretary, most handsome commendation and unstinted praise. May we, in the future, sustain the reputation thus attained.

Respectfully submitted.

BENJ. HOGAN RIGGS, M. D.,
Secretary M. A. S. A.

The Treasurer's annual report was then read, received and filed.

TREASURER'S REPORT.

W. C. Jackson, M. D., Treasurer,

In account with the Medical Association of the State of Alabama.

TO AMOUNT DUES COUNSELLORS.	Dr.
Dr. Jerome Cochran	$ 10 00
" F. A. Ross	10 00
" W. H. Anderson	10 00

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Dr. C. Toxey	10 00
" W. D. Bizzell	10 00
" T. O. Summers	10 00
" Peter Bryce	10 00
" R. D. Jackson	10 00
" R. D. Webb	10 00
" J. D. Johnston	10 00
" L. E. Starr	10 00
" F. M. Peterson	10 00
" G. E. Kumpe	10 00
" C. A. Crow	10 00
" L. W. Desprez	10 00
" J. P. Burke	10 00
" W. A. Johnston	10 00
" N. D. Richardson	10 00
" M. H. Jordan	10 00
" Wm. Hester	10 00
" E. P. Gaines	10 00
" J. J. Dement	10 00
" E. D. McDaniel	10 00
" J. S. Ruffin	10 00
" J. S. Bankson	10 00
" J. S. Weatherly	10 00
" Jas. Guild	10 00
" E. A. Semple	10 00
" A. J. Reese	10 00
" Jas. Gillespie	10 00
" S. P. Smith	10 00
" R. F. Michel	10 00
" B. H. Riggs	Secretary.
" W. C. Jackson	Treasurer.
" E. H. Fournier	10 00
" G. A. Ketchum	10 00
" John Little	10 00
" Rhett Goode	10 00
" J. T. Gilmore	10 00
" S. H. Hill	10 00
" Wm. Desprez	10 00

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Dr. W. C. Cross	10 00
" L. H. Sadler	10 00
" C. H. Franklin	10 00
" G. Owen	10 00
" R. W. Toole	10 00
" J. M. Godfrey	10 00
	$450 00

DUES DELEGATES.

Dr. C. D. Parke	$ 5 00
" C. J. Clark	5 00
" J. P. Furniss	5 00
" J. B. Gaston	5 00
" S. D. Seelye	5 00
" A. T. Pearsall	5 00
" W. A. Bradfield	5 00
" R. O. Masterson	5 00
" W. H. Harrison	5 00
" R. Inge	5 00
" L. L. Carter	5 00
" J. H. Giles	5 00
" J. J. Michone	5 00
" S. W. Sears	5 00
" J. C. Dozier	5 00
" W. T. McAlister	5 00
" L. H. Pou	5 00
" T. C. Osborn	1 00
" W. C. Ward	1 00
	$87 00

DUES MEDICAL SOCIETIES.

Medical and Surgical Society of Montgomery	$ 24 00
North Alabama Medical Society	18 00
Marengo " "	15 00
Sumter County " "	14 00
Mobile " "	8 00
Madison " "	9 00
Tuscaloosa " "	8 00
Marion " "	6 00
Selma " "	5 00

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Canebrake Medical Society	5 00
Bullock " "	5 00
Chocktawhatchie " "	5 00
	$122 00
Balance due last settlement	$12 77
Amount of receipts	671 77
	CR.
By account Barrett & Brown	$ 572 70
" " Armstrong	20 50
" " Dr. Riggs	7 70
" " " Cochran	12 50
" " Expenses Selma	5 00
	$618 40

RECAPITULATION.

By dues Counsellors	$ 450 00
" " Delegates	87 00
" " County Societies	122 00
" balance last report	12 77
	$671 77

BY CREDITS.

Barrett & Brown	$ 572 70
Armstrong	20 50
Riggs	7 70
Cochran	12 50
Expenses Selma	5 00
	$618 40
By balance	$53 37

All of which is respectfully submitted.

W. C. JACKSON, M. D.,
Treasurer Med. Association of the State of Alabama.

The annual report of the Board of Censors, which was next in order, was postponed until to-morrow by request of the Senior Censor.

Reports of County Societies, "as to status, membership, etc.," 5th order of business, being next in order, were read by the Secretary and filed. The reports embraced the

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condition, list of officers, etc., of twenty-one Societies, as well as the condition of health of various localities, and other matters of interest.

The reports may be found in their proper place in this volume.

On motion of Dr. Ketchum, of Mobile, the reports were referred to the Board of Censors, as many of them requested charters from the association.

6th order. Motions, resolutions, and miscellaneous business.

Letters were read by the Secretary from Dr. W. F. Barr, Delegate from the State Medical Society of Virginia, stating his inability to attend; from Dr. Middleton Michel, who had been appointed a Delegate from the South Carolina Association, setting forth his unavoidable absence; and from other distinguished members of societies in other States, expressive of their approbation of the aims of this association.

On motion of Dr. Ketchum the following telegram was directed to be sent to the Medical Association of South Carolina, now in session at Charleston, S. C.:

To the Medical Association of the State of South Carolina:

The Medical Association of Alabama extends a cordial greeting to the Medical Association of South Carolina, and wishes it and all kindred organizations prosperity in its high purposes.

7th order. Regular reports, etc.

Recent Progress in Practical Medicine.—Dr. Geo. A. Ketchum, Mobile. Had prepared no report, and asked indulgence until the next regular meeting.

Hygiene and State Medicine.—Dr. Jerome Cochran, Mobile. Dr. Cochran stated that he had made no report on the above subject, but had prepared one on small pox, which he had left at his hotel and asked until to-morrow to read it. Granted.

Inhibitory Nerves.—Dr. R. Fraser Michel, Montgomery. No report.

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Great Malarial Epidemics.—Dr. T. C. Osborn, Greensboro. No report.

Tuberculosis.—Dr. E. P. Gaines, Mobile.

Dr. Gaines said he had a report on the differences between Scrofula and Tuberculosis, and kindred diseases, at his room, and would read it at the afternoon session.

On motion of Dr. Michel, Dr. Geo. A. Ketchum, of Mobile, was invited to deliver an address before the association and the public, on to-morrow (Wednesday) night, in the U. S. Court Room, at 8½ o'clock.

Dr. Ketchum, though taken by surprise, expressed a willingness to do what he could to enhance the interest and pleasure of our session.

The association now adjourned until 2½ o'clock this evening.

EVENING SESSION.

HALF-PAST TWO O'CLOCK.

The President in the Chair.

Dr. Gaines then engaged the attention of the association by reading his report on Scrofulosis and allied diseases, which may be found in its proper place.

This highly original and instructive paper was evidently prepared after much study and much experience; it contains many new ideas, founded on close reasoning, based on much observation, and will well repay the reader for attention bestowed on it.

It drew out much discussion, mostly commendatory, which was participated in by Drs. Weatherly, Cochran, Seelye, Gaines, Riggs, Johnston, Bankson and others.

On motion the association now adjourned to meet at eight

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o'clock to-night to attend, in a body, the address of the President.

NIGHT SESSION.

The association reconvened at 8 P. M., and went in a body to the U. S. Court Room to hear the President's address, which may be found in its proper place.

His subject was the recent act of the legislature making the association the State Board of Health, and the consequent duties which this act imposes upon the association. He elaborated the importance of the duties and showed that it was within the power of the association, by proper action, to greatly benefit the State by reducing, if not entirely destroying, the fatal effects of all preventable diseases, such as cholera, small pox, &c. He denominated miasma as the greatest impediment to the increase of our population by immigration, and argued that by a proper system of drainage, &c., under the direction of the State Board of Health, much could be done towards removing this impediment. He argued that all moral diseases and bodily infirmities which were transmitted from generation to generation, were, to a great extent, susceptible of prevention, and that they should be brought under the control of the State through the Board of Health. His address was delivered in an easy and graceful manner, and was listened to attentively by quite a large audience of ladies and gentlemen.

The association then adjourned until ten o'clock to-morrow morning.

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SECOND DAY.

WEDNESDAY, April 14th, 1875.

The Association met April 14th pursuant to adjournment, at the Hall of the Medical and Surgical Society of Montgomery, and was called to order by the President at 10½ o'clock A. M.

Some reports, under 5th order, from County Societies, were read by the Secretary.

The report of the Board of Censors was again postponed until to-morrow morning, by request of the Senior Censor.

Dr. Cochran now read a paper on Small Pox, commencing with its history as it appeared in Mobile in 1864–5, giving an interesting history of that terrible pestilence in several large cities, and entering at length into the causes, mode of spread, treatment, curative and preventive, the subject of vaccination, and all other important questions involved in the subject.

At the conclusion of the reading of the report there was a somewhat lengthy discussion on the subject, participated in by Drs. Gaines, Guild, Baldwin, Cochran, Gaston and Seelye.

Dr. W. A. Bradfield now read a report of cases of Puerperal Eclampsia and a case of Necrosis, in which amputation was performed by aid of Esmarch's apparatus. These reports may be found in their proper place.

He exhibited the spiculæ of bone removed, and Esmarch's apparatus used by him.

On motion of Dr. Michel the annual address of the President was referred to the Board of Censors.

Dr. E. A. Semple invited the association and profession to meet him to-night, immediately after Dr. Ketchum's address, at the residence of Mr. Joel White, to partake of his hospitality.

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The Association now adjourned until 8 o'clock this evening, when it reassembled to attend in a body the address of Dr. Geo. A. Ketchum, of Mobile.

The House of Counsellors to convene this afternoon at 2½ o'clock, in this place.

The Association to-day lunched at the residence of Dr. J. S. Weatherly, President.

NIGHT SESSION.

The Association met at 8 o'clock P. M., and attended the address of Dr. Ketchum.

Dr. Weatherly introduced to the audience Dr. G. A. Ketchum, and in doing so said that Dr. Summers, who had been appointed Orator, was absent in Europe, and Dr. Johnston of Marion, alternate, was unexpectedly prevented from attending by sickness in his family, which made it necessary for him to be absent from the State at this time. Dr. Ketchum had, at the request of the Association, consented to deliver an address, rather than that this part of the annual Proceedings should be omitted. His address was without previous notice or preparation for the occasion, but he was satisfied it would interest the audience.

Dr. Ketchum selected as the subject of his address the Code of Ethics of the Profession. He referred to the first Code, established by Hippocrates, and the advancement the profession has made from that day to the present, as well in its Ethics as in the science of medicine. He treated the present Code of Ethics under the following heads: (1.) The duty of the physician to his patients; (2.) The duty of the patient to his physician; (3.) The duty of the members of

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the profession to each other; (4.) The duty of the profession to the public, and the duty of the public to the profession.

Under these several heads, the learned gentleman discussed his subject with great ability and much eloquence.

The style of his address was admirable, and the manner of its delivery most excellent and agreeable.

There was a large audience present, all of whom were well pleased.

THIRD DAY.

THURSDAY, April 15th, 1875.

The Association met pursuant to adjournment on Thursday, April 15th, at the Hall of the Medical and Surgical Society of Montgomery, and were called to order by the President, Dr. Weatherly, in the Chair, at half-past ten o'clock.

The report of the Board of Censors being announced as ready, the Senior Censor, Dr. Jerome Cochran, proceeded to read it.

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THE SECOND ANNUAL REPORT

OF THE

Board of Censors of the Medical Association

OF THE STATE OF ALABAMA.

INTRODUCTION.

In the report which we submitted last year, we gave expression to some sentiments which we desire to repeat with as much emphasis as we are capable of using. They are these:

"We have no hesitation in saying that the Medical Profession is fully able to bring about a reformation of all the evils from which it suffers. But this consummation most devoutly to be wished, cannot be accomplished by wishing—cannot be accomplished either by means of grandiloquent speeches and paper resolutions—can indeed be accomplished only in one way, namely: by wise and resolute work, and by thorough organization and concert of action among the members of the Profession.

"To construct out of the scattered members of our Profession a powerful organization, and through this organization to secure concert of action and the prevalence of wise and prudent counsels—this is the mission of our Association."

It is fitting that this mission of our Association should always be borne in mind so that we may always appreciate our obligations and responsibilities,—so that we may see clearly what our duty is and pursue it with unwavering resolution,—so that each one of us may always remember that it is not for his own advancement that he is to labor, but for the advancement in honor, dignity and influence of the Profession of Medicine.

It is also well that we should understand further that the primary and principal object of our Association is not the cultivation of the Science and Art of Medicine. Truly this is a matter not to be neglected, and incidentally we hope to accomplish something in this direction also. But it is not this which

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we have chiefly at heart. Studies of this sort might perhaps be pursued quite as profitably, and much less expensively, at home. We will appreciate most adequately the real character of the Association if we regard it as a Medical Legislature, having for its highest function the governmental direction of the Medical Profession of the State; while its other functions, important as they may be in themselves, are, in comparison with this, of quite subordinate rank.

It will not be amiss here to quote that Article of our Constitution, namely, the third, which relates to the objects of the Association. It is in these words:

"ARTICLE 3. The objects of this Association shall be to organize the Medical Profession of the State in the most efficient manner possible; to encourage a high standard of medical education, and regulate the qualifications of practitioners of medicine within the State; to promote professional brotherhood and encourage a high standard of professional ethics; to combine the influence of all the medical men in the State so as to secure by legislative enactments their own legitimate rights and privileges, and the protection of the people against all medical quackery and humbug; to encourage the study of the medical botany, medical climatology, and medical topography of the State; to secure careful and reliable accounts of all the endemic and epidemic diseases of the State; in a word, to watch over and protect, encourage and aggrandize all the interests of the Medical Profession of the State."

THE STATE-BOARD OF HEALTH.

At the session of the Association last year, in Selma, the Board of Censors was instructed to present for the consideration of the General Assembly of the State a bill entitled "A bill to establish Boards of Health in the State of Alabama."

We have to report that in reference to this matter we have endeavored to fulfill the wishes of the Association. We submitted the bill to the General Assembly, together with a printed memorial, explaining the grounds upon which the Medical Association deemed it advisable that it should be enacted into a law. The memorial in question is here subjoined:

"*Nos etiam Speravimus meliora.*"

THE MEMORIAL OF THE MEDICAL ASSOCIATION OF THE STATE OF ALABAMA.

To the Honorable the Senate and House of Representatives
of the State of Alabama, in General Assembly convened:

We, the Board of Censors of the Medical Association of the State of Alabama, at the last annual session of the Association, which was held in the city

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of Selma on the 13th, 14th and 15th days of April of the present year (1874), were charged with the duty of presenting for the consideration of your honorable bodies the subjoined draft of "A bill to establish Boards of Health in the State of Alabama."

In the performance of this duty we would most respectfully state:

1. That the need of legislative enactments for the promotion of the public health has been recognized in almost all civilized communities, health-boards and health-laws being a part of the regular machinery of government in most European countries, and in several of the States of the American Union.

2. That here in the State of Alabama thousands of deaths and tens of thousands of cases of sickness occur every year from diseases which might be prevented, entailing on the people an amount of physical suffering and of pecuniary loss, which it would not be easy to exaggerate.

3. That the Medical Association of the State, after mature deliberation, has unanimously endorsed the plan for the organization of a health-system, which is now presented to the General Assembly.

4. That this plan will secure the co-operation of the entire Medical Profession of the State.

5. That the expense to the State which it involves is extremely small.

6. That the expense to the several counties and cities of the State which it involves, is left entirely to the proper legal authorities of such counties and cities as choose to avail themselves of its advantages.

All of which is respectfully submitted.

JEROME COCHRAN, M. D.,
JAMES GUILD, M. D.,
R. F. MICHEL, M. D.,
GEORGE E. KUMPE, M. D.,
W. D. RICHARDSON, M. D.,

Board of Censors of the Medical Association of the State of Alabama.

All the members of the Board of Censors, fully appreciating the importance of the movement, both to the Medical Profession and to the people of the State, did what they could to facilitate the passage of the bill; and in furtherance of this purpose they received the cheerful assistance of the members of the Association generally. One member of the Association, and only one so far as we know, was so far forgetful of his duty to the Association, and of the implicit obligation he was under to forbear from all overt opposition to its decisions, as to make himself quite active in endeavoring to influence the General Assembly against the approval of the bill. It also met with opposition from several medical gentlemen who are not members of the Association, and

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who make it a rule to oppose whatever the Association favors, a sort of opposition not so much to be wondered at, and which need give us but little concern.

By the members of the General Assembly the proposed plan was for the most part favorably received. Indeed, we have reason to believe that it would have been approved without hesitation but for the factious opposition of members of the Medical Profession to which we have just alluded. After much discussion, particularly in the Senate, the bill finally passed both houses of the General Assembly and was approved by the Governor of the State on the 19th of February of the present year.

It is necessary, however, for us to explain that the bill, in the form which it ultimately assumed, differs in two particulars from the original draft which was endorsed by the Association. The changes are as follows:

The third section has been amended so as to provide that instead of a specific appropriation of one thousand ($1,000) dollars *per annum* to defray the expenses of publishing our Transactions, the publication shall be done at the expense of the State in the same way as other public documents are published.

The last section of the bill has been amended by the addition of a clause, providing that the bill may be at any time amended or repealed, at the pleasure of the General Assembly.

We assented to both of these amendments, under the pressure of circumstances; but we did so reluctantly, and have still to regret the necessity which required the concession.

We regret the change in the third section, in the first place because the publication and distribution of our Transactions ought to be, and indeed must be, under our own control, inasmuch as any other arrangement might lead to unpleasant complications; and because, in the second place, while the Association meets in April of each year, the General Assembly does not meet until November, so that we will either have to print our Transactions ourselves and trust to the General Assembly to refund the amount expended, or else have the publication inconveniently delayed.

As to which of these two courses it is expedient for the Association to adopt, we have no hesitation whatever in recommending the former—namely, that we have our printing done as heretofore, under our own supervision, and at our own immediate expense. If the General Assembly is pleased to refund the amount, of course we will be pleased to receive it. If, on the contrary, the General Assembly refuses to refund the amount, we are glad to be able to say that we are able to do without it.

In the meantime, we are of the opinion that whenever circumstances war-

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rant the attempt, we should make application to the General Assembly to restore this third section to its original form.

We object to the change in the last section because it seems virtually to ignore the fact that the arrangement by which the Medical Association assumes the supervision of the public health is really of the nature of a contract between the Association and the State. And while we concede that it is entirely proper for the General Assembly to have the power to annul the contract at any time, we cannot concede that one of the contracting parties can have the right to alter the terms of the agreement without consultation with the other. But we are of the opinion that this amendment is more likely to prove objectionable in theory than in practice, and we therefore dismiss it without further argument.

After careful consideration of the whole subject we are of the opinion that the Association should accept the provisions of the bill in the form in which it passed the General Assembly.

A copy of the bill in this form is here subjoined:

AN ACT TO ESTABLISH BOARDS OF HEALTH IN THE STATE OF ALABAMA.

SECTION 1. *Be it enacted by the General Assembly of the State of Alabama*, That the Medical Association of the State of Alabama, organized in accordance with the provisions of the Constitution, which was adopted by said Association at its annual meeting, in the city of Tuscaloosa, in March, 1873, be and is hereby constituted the Board of Health of the State of Alabama.

SECTION 2. *Be it further enacted*, That the Board of Health of the State of Alabama, thus established, shall take cognizance of the interests of health and life among the people of the State; shall investigate the causes and means of prevention of endemic and of epidemic diseases; shall investigate the influences of localities and employments upon the public health; shall from time to time make to the General Assembly such suggestions as to legislative action as in their judgment may seem advisable; and shall be, in all ways, the medical advisors of the State.

SECTION 3. *Be it further enacted*, That such Board of Health of Alabama shall make to the Governor for transmission to the General Assembly an annual report of their investigations and transactions; of which annual report there shall be annually published, as other reports transmitted through the Governor to the General Assembly, a sufficient number of copies for distribution among the members of the General Assembly, and the members of the Board of Health of the State of Alabama, and such additional numbers as may be deemed advisable for the purpose of exchanging for the reports of similar Associations in other States.

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SECTION 4. *Be it further enacted*, That the County Medical Societies, in affiliation with the Medical Association of the State of Alabama, and organized in accordance with the provisions of the Constitution of the said Association, as described in the first section of this act, be and are hereby constituted Boards of Health for their respective counties; and, as such, shall be under the general direction of the Board of Health of the State of Alabama, created by the first section of this act.

SECTION 5. *Be it further enacted*, That the County Boards of Health, thus established, shall have only advisory powers, and shall be conducted without expense to the State or to their respective counties, except under the conditions provided for under the sixth section of this act, which here follows:

SECTION 6. *Be it further enacted*, That the competent legal authorities of any county in this State, or of any incorporated town or city of any such county, shall, whenever in their judgment it becomes expedient to do so, proceed to invest the Board of Health of the county, with such executive powers and duties for the promotion of the public health, and under such rules and stipulations as shall be agreed upon between the two parties.

SECTION 7. *Be it further enacted*, That in any such agreement, as is contemplated in section six of this act, the right to elect or appoint the officers and servants employed in the administration of the sanitary regulations so agreed upon shall, in all cases, be reserved to the Board of Health; and further, that all questions relating to salaries, appropriations, and expenditures, shall be reserved to the legal authorities of the county, town, or city, as the case may be.

SECTION 8. *Be it further enacted*, That no Board of Health, or advisory, or executive medical body of any name or kind for the exercise of public health functions, shall be established by authority of law in any county, town, or city of this State, except such as are contemplated by the provisions of this act, the object of this prohibition being to secure a uniform system of sanitary supervision throughout the State. But nothing in this article shall be so construed as to prevent any of the Boards of Health created by section four of this act from accepting and executing any special powers that may be granted them by the General Assembly of the State; *Provided*, That this act may be changed, modified, or repealed at any time, at the pleasure of the General Assembly of this State.

Approved February 19th, 1875.

STATE OF ALABAMA,
OFFICE OF SECRETARY OF STATE.

I, R. K. Boyd, Secretary of State of the State of Alabama, do hereby certify that the foregoing act entitled An act to establish Boards of Health in the State

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of Alabama, approved February 19th, 1875, is a true and correct copy of the original now on file in this office.

L. S.

Given under my hand and the Great Seal of the State, affixed at Montgomery, this 15th day of April, A. D., one thousand eight hundred and seventy-five, and of the independence of the United States of America the ninety-ninth year.

(Signed) R. K. BOYD,
Secretary of State.

In order to facilitate the action of the Association in reference to this matter we have prepared the following resolutions, and respectfully recommend their adoption:

Resolved, That the Medical Association of the State of Alabama hereby accept for themselves and for the County Medical Societies under their jurisdiction the provisions of an act entitled An act to establish Boards of Health in the State of Alabama, and approved by the Governor on the 19th day of February, A. D. 1875; and will endeavor to discharge the duties assigned to them in said act in good and with earnest purpose, to be of service to the people of Alabama.

Resolved further, That a copy of these resolutions, properly certified by the President and the Secretary of the Association, be transmitted to the Governor of the State.

If the Association, in accordance with our recommendation, should accept the terms of agreement authorized by the State, then at once several questions of practical importance present themselves for solution.

We must decide, for example, whether we ought to expect the State to defray the expenses of publishing the Transactions of our present session; and whether the Transactions of our present session should be designated in its subordinate title as the report of the State Board of Health.

We are unhesitatingly of the opinion that both of these questions must be answered in the negative—that the Association does not, in fact, become the State Board of Health until it has made formal acceptance of the terms of agreement and notified the State accordingly.

Still further, if we accept the terms and undertake to discharge the functions of the Board of Health of the State, we must proceed to what specific duties the discharge of these functions devolves upon us, and what special action is necessary for their execution. In other words, we must decide what we are to do, and how we are to do it.

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The duties of Boards of Health may be either advisory, or executive, or both. The duties of this Association, in its character of State Board of Health, are of necessity, for the present, chiefly of an advisory kind. They will become executive also in due time, namely, when an increasing population shall demand, and increasing prosperity shall warrant the State to attempt more energetic supervision of the public health than is now possible. In the meantime, we must proceed wisely and prudently. Even the members of the Medical Profession have as yet a very inadequate appreciation of the ends and aims, and especially of the actual resources of sanitary science. Not much knowledge, then, of this sort is to be expected of members of the General Assembly and of the general public. Hence it results that wise sanitary legislation is difficult to obtain; and that appropriations for sanitary purposes are made for the most part with hesitation and reluctance; so that a municipal corporation which will expend, without hesitation, many thousands of dollars for the protection of the homes of the people against the ravages of fire, can hardly be induced to expend as many hundreds for the protection of the lives of the people against the ravages of disease. All these things must be remembered, and we must not expect too much in the way of public appreciation and encouragement. Contrariwise we must possess our souls in patience, doing what good we can, and striving in the meantime, to educate our people to some adequate appreciation of the value of sanitary science to the welfare of communities and States.

Inasmuch as we have no salaried officers, and no financial resources, we are obliged to refrain for the present from every sort of work that has to be directly paid for. Nevertheless there is work enough for us to do, and work too of very great importance.

First of all we must arrange our plans of procedure, and determine the organs, the special machinery, through which our health functions can be discharged with the best prospect of facility and efficiency of action. To this end we respectfully recommend the adoption of the following Ordinance, namely:

ORDINANCE IN RELATION TO THE COMMITTEE OF PUBLIC HEALTH.

1. *Be it Ordained by the Medical Association of the State of Alabama*, That the five Censors of the Association, together with five other members, to be elected from the House of Counsellors, under the same regulations as to method of election, terms of office, *et cætera*, as are prescribed in Articles 24, 25 and 26 of the Constitution, for the election of Censors, be and are hereby constituted a Committee of Public Health.

2. *Be it further ordained*, That the Committee of Public Health shall be the

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supervisory and immediately responsible agents of the Association in the discharge of its functions as Board of Health of the State.

3. *Be it further ordained*, That the Committee of Public Health shall act as a general committee of reference in all matters relating to the sanitary interests of the State, and this both during the sessions and during the intervals between the sessions of the Association.

4. *Be it further ordained*, That the Committee of Public Health shall prepare for the consideration of the Association such plans and suggestions as from time to time may seem to them expedient and proper.

In relation to the County Societies which, in their capacity of Boards of Health have been placed by the act of the General Assembly which we are now discussing under the general direction and control of this Association, we appreciate very thoroughly the fact, that over large portions of the State, circumstances will not warrant the expectation from them of any considerable amount of sanitary work. Still they ought to be able to do something. They ought, for example, to be able to prepare accurate accounts of their endemic and epidemic diseases. They ought to be able to prepare descriptions and charts of the geological and topographical formations, and the climatological characteristics of their respective counties; and to indicate the relations between these several classes of conditions and the public health. They ought also to be able, even in the absence of any registration law, to furnish approximately complete statements of the vital and mortuary statistics of their several counties, and these could not fail to be of considerable value. All judicious action must be based on accurate knowledge, and the reports here indicated, would furnish to this Association the information needed, for the intelligent administration of the trusts which have been confided to its keeping by the law-makers of the State.

The County Societies, therefore, should complete their sanitary organization, and hold themselves in readiness to take advantage of such opportunities to be of public service, as may from time to time present themselves.

What special form of sanitary machinery the several County Societies shall adopt is left largely to their own discretion, provided only, that it shall be in harmony with the health-law of the State, and with the plan of organization of this Association, and of course must be governed to some extent by the special circumstances of every special case. But inasmuch as uniformity in these arrangements is very much to be desired; and inasmuch, further, as the multiplication of offices in small societies is attended with many evident disadvantages, we venture to recommend that the Boards of Censors of the sev-

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eral County Societies be made the agents of these Societies for the discharge of their health functions.

Medical Legislation.

On the important subject of medical legislation we have some suggestions to make for the consideration of the Association. As the Board of Health of the State, it will be the duty of this Association to recommend to the General Assembly, from time to time, the enactment of such laws as may seem to be required for the advancement of the sanitary interests of the State; and as the organic representative of the Medical Profession, we conceive that it is also the province of this Association to recommend to the General Assembly the enactment of such laws as may be required for the regulation of the practice of medicine in the State. It seems to us, indeed, that no laws affecting the interests of the Medical Profession in any way, should be allowed to go before the General Assembly without first having received the endorsement of the Association.

Bills of the character here referred to are not infrequently pressed upon the consideration of the General Assembly, and this, too, upon the suggestion of medical men. But a few medical men without organization or concert of action with the profession at large, ought not to presume to influence legislation which is to affect the whole profession. It happens, too, unfortunately, that the legislation thus sought is not always free from serious objection. Take in illustration a single example: There was a proposition before the General Assembly during its last session to relieve physicians from the payment of the State license tax. Now we are of the opinion that it is very bad policy to be annoying the law-makers of the State with applications for such small favors as this. We are not willing that medical men shall condescend to be beggars. The spirit of the mendicant is little in harmony with the dignity and with the glorious traditions of our profession; and this clamoring for small favors cannot fail to degrade us in the estimation of thinking men. But not only do we believe it to be bad policy to beg the State for small favors. We go still further and take still higher ground. We ought to make it an inflexible rule *never to seek to influence the enactment of laws that are for our own exclusive benefit.* Let us ask nothing of the General Assembly which is not quite as much for the advantage of the general public as of the profession of medicine.

Of this character is the plan of a law to be entitled An Act to Regulate the Practice of Medicine in the State of Alabama, which we placed before the Association at our session in Selma last year. We present this bill again to the Association with some changes in the fourth section, and bespeak for it the

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most careful and deliberate consideration. The time has not yet come when it is expedient to memorialize the General Assembly to enact it into a law, and we therefore recommend that no definite action be taken in regard to it during the present session. In its improved form it reads as follows:

AN ACT TO REGULATE THE PRACTICE OF MEDICINE IN THE STATE OF ALABAMA.

SECTION 1. *Be it enacted by the General Assembly of the State of Alabama*, That no person shall be permitted to practice medicine, in any of its branches or departments, as a profession and means of livelihood, in this State, without having obtained a Diploma or Certificate of Qualification from some authorized Board of Medical Examiners as hereinafter provided.

SECTION 2. *Be it further enacted*, That the Board of Censors of the Medical Association of the State of Alabama, organized according to the Constitution of the said Medical Association of the State of Alabama, which was adopted at its annual meeting in the city of Tuscaloosa, in March, 1873; and the Boards of Censors of the several County Medical Societies, which are in affiliation with the said Medical Association of the State of Alabama, and organized in accordance with the provisions of the Constitution just mentioned; and the Faculties of all Regular Medical Colleges holding charters from the General Assembly of the State of Alabama and recognized as of good standing by the said Medical Association of the State of Alabama, be and are hereby constituted the authorized Boards of Medical Examiners referred to in the first section of this act.

SECTION 3. *Be it further enacted*, That the standard of qualifications required of persons desiring to practice medicine in this State, together with the rules for the government of the authorized Boards of Medical Examiners, shall be such as may be determined from time to time by the said Medical Association of the State of Alabama in accordance with the provisions of its said Constitution of 1873.

SECTION 4. *Be it further enacted*, That every Diploma or Certificate of Qualification, authorizing any person to practice medicine in this State, which shall be issued by any authorized Board of Medical Examiners, shall be presented to the Probate Judge of the county in which said person resides, who shall officially endorse the same, and seal it with the seal of the county, and who shall also cause a full and fair copy of the same to be made in a well bound book to be kept for that purpose, and called the Register of Licensed Practitioners of Medicine, and for this service he shall be entitled to a fee of one dollar.

SECTION 5. *Be it further enacted*, That if any person holding a Diploma or Certificate to practice medicine from any authorized Board of Medical Exam-

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iners in this State, shall be charged in regular form with any grossly immoral, ungentlemanly, or unprofessional conduct, he shall be summoned before said Board of Medical Examiners, or before such other authorized Board of Medical Examiners as may be able most conveniently to exercise jurisdiction in the case, to answer to said charge; and if, after fair trial, and with the right of appeal, according to the provisions of section sixteen of the Constitution of the Medical Association of the State, he shall be adjudged to be guilty as charged, then his Diploma or Certificate shall be revoked; and of this revocation the Judge of Probate of the county in which said Diploma or Certificate may have been recorded, shall be officially notified by the Board of Medical Examiners before whom the case was tried, and he shall endorse said revocation across the face of the Record of the Diploma or Certificate in the Register of Licensed Practitioners of Medicine kept in his office; and after this said person shall be debarred from the further practice of medicine in this State, and shall become liable to all the penalties of this act as hereinafter provided.

SECTION 6. *Be it further enacted*, That any person practicing medicine in this State in violation of any of the provisions of this act, shall be guilty of a misdemeanor, and upon conviction thereof before any court having competent jurisdiction, shall be fined in the sum of not less than fifty ($50) dollars nor more than five hundred ($500) dollars for every such offence, one-half of said fine to be paid to the prosecutor and the other half to the county treasury; and if the fine so imposed be not immediately paid, said person shall be imprisoned in the county jail for not less than one month nor more than one year for every such offence.

SECTION 7. *Be it further enacted*, That all persons who shall be actually engaged in the practice of medicine in any county of this State, before the organization of the Board of Medical Examiners in said county, and who hold the Diploma of Doctor of Medicine from any regular Medical College, shall be entitled to the Certificate of the Board of Medical Examiners, and to be inscribed in the Register of Licensed Practitioners of Medicine without examination as to qualification.

SECTION 8. *Be it further enacted*, That all persons who shall be actually engaged in the practice of medicine in any county of this State, before the organization of the Board of Examiners in said county, and who practice any irregular system of medicine so as not to be recognized by the Board of Medical Examiners as regular physicians, shall be licensed and registered by the Probate Judge, in such manner and form as he may himself elect; and all such irregular practitioners so licensed and registered by the Probate Judge of any

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county, shall be exempt from any and all of the penalties provided in section five of this act.

SECTION 9. *Be it further enacted*, That none of the provisions of this act shall apply to persons practicing Homeopathy; provided, that such persons are graduates of regular Medical Colleges, or of Homeopathic Medical Colleges.

SECTION 10. *Be it further enacted*, That the provisions of this act shall take effect, in any county of this State, whenever the Board of Medical Examiners for said county shall have been organized, as hereinbefore provided, and the fact of such organization officially communicated to the Probate Judge of said county, by the Board of Censors of the Medical Association of the State.

SECTION 11. *Be it further enacted*, That all laws and parts of laws in conflict with the provisions of this act, be and the same are hereby repealed.

MEDICAL EDUCATION.

Another matter of great importance, to which we feel compelled to allude, is the subject of Medical Education. We have too many Doctors; and the standard of qualifications for graduation in our multitudinous Medical Colleges is deplorably, we might almost say shamefully, low. We all know that the Profession is crowded with incompetent men, and that other incompetent men are continually gaining admission to its ranks. We all agree that this ought not to be so; that it is an evil that is constantly increasing; and that something ought to be done to put a stop to it. But up to this time the question, How shall it be stopped? has received no practical solution. But are we, therefore, to lose heart and hope, and fold our hands with the apathy which is born of despair? Nay, verily—a thousand and a thousand times, No! The evil has grown out of the fact that the Profession, instead of guarding the doors of admission into their ranks with jealous scrutiny for themselves, have left the examination of students and the conferring of the degree of Doctor of Medicine entirely in the hands of the Faculties of the Medical Colleges. But this evil, colossal as it has grown to be, will be utterly destroyed whenever the Profession in good faith make the simple resolution, and act up to it, that they will no longer recognize the Diplomas of Colleges, but will determine for themselves to whom and upon what terms they will accord professional recognition and fellowship. This is too large a question to be argued here. What we desire to say is simply that we believe that the evil mentioned can be very materially diminished by the application of very simple measures, provided that the application of these measures is faithfully made. We would have the evil assaulted where it is most vulnerable, namely, in its cradle—in its very origin. If nobody was allowed to commence the study of medicine except

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such persons as have good natural ability and a decent preliminary education, it is easy to see that the number of doctors annually graduated in this country would be very greatly diminished; and would be diminished by the excision of that class of doctors which it is most desirable to get rid of—namely, the class of ignoramuses and incompetents.

We therefore recommend very earnestly, that the County Medical Societies be advised to put at once into practical operation that Article of the Constitution (the 71st) which makes it the duty of the Boards of Censors of the County Societies to examine all persons proposing to begin the study of medicine in their respective counties, and which further enjoins that no practitioner of medicine shall receive as a student any one who does not hold a certificate of having passed this preliminary examination favorably.

Corresponding Members.

It is a part of the Constitutional duty of the Board of Censors to recommend to the Association the names of such persons as they may think deserving of places in the Roll of Correspondents. We have, at the present session to recommend for this position the following gentlemen, all of whom have been heretofore connected with the Association, either as Delegates or as Counsellors, and who have now ceased to be residents of the State of Alabama:

Dr. Thomas O. Summers, Jr., formerly Professor of Chemistry and Physiology in the Southern University at Greensboro, and now Professor of Anatomy in the Medical Department of the University of Nashville.

Dr. A. S. Garnett, formerly Professor of Natural History in the University of Alabama, and now a practitioner at Hot Springs, Arkansas.

Dr. William A. Bradfield, formerly of Perry county, and several times a delegate to this Association, and now a practitioner at Pascagoula, Mississippi.

Applications for Charters.

Applications for Charters have been made by the following County Societies, namely:

The Medical Society of the county of Dallas (Selma).
The Medical Society of the county of Butler.
The Medical Society of the county of Perry.
The Medical Society of the county of Autauga.
The Medical Society of the county of Talladega.
The Medical Society of the county of Hale.

We have satisfied ourselves that the Constitutions of these several Societies are all in harmony with the Constitution of this Association, and we therefore recommend that the applications be granted, and that the Charters be issued properly certified and sealed, as soon as the blank forms of charter and the seal of the Association have been obtained.

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Annual Reports of the Secretary and of the Treasurer.

We have examined the Annual Reports of the Secretary and of the Treasurer, and find them respectively satisfactory and correct. We therefore recommend that they be approved.

In order to facilitate the transaction of business in our annual sessions, and to relieve Committees of Arrangement of some embarrassment, we respectfully recommend the adoption of the following Ordinance, namely:

Ordinance in Relation to the Order of Proceedings at the Annual Sessions.

1. *Be it ordained by the Medical Association of the State of Alabama*, That during the annual sessions of the Association the daily meetings shall extend from 10 o'clock A. M. to 3 o'clock P. M., except on the first day of the session, when the Association shall be called to order promptly at 12 o'clock noon, and shall adjourn at 3 o'clock P. M.

2. *Be it further ordained*, That the Annual Oration shall be delivered on the evening of the first day of the session; and that the Annual Session of the House of Counsellors shall be regularly fixed for the evening of the second day of the session.

The President's Address.

Finally, we have to report that we have carefully examined the Annual Address of the President of the Association, Dr. J. S. Weatherly, which was referred to us by special motion. We find it to be a truly admirable production, and one that reflects credit upon its author and upon the Association over which he has presided. We have no hesitation in asserting that it is far above the average of such Addresses in ability and in practical interest and importance. It is of that rare character of merit which makes it interesting and instructive, both to the Medical Profession and to the general public. Its wide circulation cannot fail to be productive of good; and we therefore recommend that one thousand copies of it be printed in pamphlet form at the expense of the Association, for general distribution under the direction of its author.

All of which is respectfully submitted.

Done at the Annual Session of the Association in the city of Montgomery, on the 15th day of April *Anno Domini*, one thousand eight hundred and seventy-five.

Jerome Cochran, M. D.,
James Guild, M. D.,
Richard Fraser Michel, M. D.,
George Ernest Kumpe, M. D.,
Nicholas Davis Richardson, M. D.,
Board of Censors.

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The Senior Censor stated that the Board was unable to comply with the instructions of the Association to procure a seal and blank charters on account of insufficient funds in the treasury, and asked further time, which was granted.

The President now announced to the Association that he had the pleasure of reading to them the following dispatch, in response to ours, from the Medical Association of South Carolina, now in session at Charleston:

DISPATCH.

CHARLESTON, S. C., April 14th, 1875.

To the President of the Medical Association of the State of Alabama:

Your kind favor draws out a hearty response from this Body, and as co-laborers in a common cause they greet you with their best wishes and highest regards. JAMES McINTOSH, M. D., President.

J. S. BUIST, M. D., Corres. Sec'y.

The President now conveyed to the Association an invitation from Dr. W. O. Baldwin, Ex-President of the American Medical Association, for the members of the Association to lunch with him to-day at the noon recess. Accepted.

The Association now proceeded to discuss the Report of the Board of Censors.

Dr. Ketchum introduced and urged the following resolutions, which were accepted by the Board, and adopted by the Association:

Resolved, That so much of the report of the Board of Censors as refers to the President's Address be adopted.

Resolved, That so much of the report as refers to the organization of the Committee on Public Health be amended by striking out the suggestion that the Committee should consist of the five officers of the Association, and be so changed as to make the Committee consist of the Board of Censors and five Counsellors, to be selected by the Association, to serve for the several terms of one, two, three, four and five years; a new member being thus elected annually.

The following recommendations of the Board of Censors

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were then adopted by the Association, viz: (1) the recommendation modifying the order of business; (2) the recommendation to notify the Governor of the acceptance of the Board of Health bill, passed by the last legislature; (3) the recommendation with regard to medical legislation; (4) the recommendation with regard to the establishment of County Boards of Censors according to Art. 71, Sec. 14, Const.

The Association then proceeded to consider the bill entitled "An Act to Regulate the Practice of Medicine in the State of Alabama," Document B. of 1874, and recommended again this year.

The Secretary read the bill *in extenso.*

Dr. Cochran said that this was a matter of serious import, and probably the Profession were not ready to act on it at the present time. He therefore moved that the bill be published in the next volume of Transactions as supplemental to the report of the Board of Censors. Adopted.

The Association then adopted the following amendment to Art. VIII, Sec. 4, Const., recommended last year:

Delegates shall be elected by the County Societies to represent them in the Association; and each County Society shall be entitled to two Delegates, whose term of service shall be for one year.

Dr. Cochran stated that though this Association was now the State Board of Health, still there was no provision made for printing our Transactions by the State; that we had best for the present go along as we had been doing in the past in this respect.

Dr. Ketchum offered the following:

Resolved, That the Association adopt so much of the report of the Board of Censors as relates to the printing of the proceedings, and that the Board of Censors be instructed to memorialize the legislature on the subject and repre-

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sent the necessity which compelled the Association to the course suggested, and to petition the legislature to refund the amount necessarily expended.

Adopted.

On motion the report of the Board of Censors was now adopted as a whole.

Dr. A. S. McKeithen, of Autauga county, now was allowed to read a report of a case of Twin Gestation, illustrating the fact that twins can be born of different fathers.

Dr. Peterson discussed at length the paper; said he supposed the placentæ of two distinct ova might attach themselves to the parieties of the womb at the same time; where there were two fathers there were two distinct placentæ. The case presented was positive proof of the possibility of conception by two different fathers. After all, this report does not furnish any evidence of superfœtation. It is now distinctly proven that impregnation occurs in the large majority of cases in the ovaries; it may occur in the tubes, but it is not usual. There is no reason why conception may not take place from different fathers having connection in close succession.

Dr. Cochran moved that the paper be referred to the Publishing Committee for publication. It may be found in its proper place.

Leave was then granted Dr. J. S. Bankson, of Jackson county, to read the report of a case of "Nystagmus."

Referred to the Publishing Committee. It may be found in its proper place.

Dr. Cochran stated that he had a paper from Dr. W. D. Bizzell, of Mobile, on Consumption, and also a paper by himself, and asked that they be referred to the Publishing Committee. Granted. They may be found in their proper places.

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On motion of Dr. Michel, the Delegates from the Medical Association of Georgia were invited to address the Association.

Dr. A. W. Griggs, of West Point, then came forward and entertained the Association with the following neat and appropriate remarks:

Mr. President and Gentlemen of the Medical Association of the State of Alabama:

As the Senior Delegate from the Medical Association of Georgia, I arise to respond briefly to the call which has just been made. The cordial greeting which we received from you upon our arrival, and the kind consideration so constantly shown us since, have made the deepest impressions upon our hearts. It would be difficult to add anything to the interest of your proceedings so far, unless we had prepared ourselves thoroughly for the task; and then we feel that what we might say would consume valuable time which could be more profitably employed, by pursuing your regular *order of business*. Our presence with you is to assure you of the fraternal feelings cherished by the Profession of Georgia toward the Profession of Alabama. We feel the deepest concern in your welfare, and an abiding hope that your efforts will be crowned with glorious results in the development of the great truths of Science, and in the elevation of the standard of our noble Profession. We bid you *God speed* in your every undertaking, and tender to you not only our sympathy, but whatever we may be able to do that can advance your prosperity. We have listened with pleasure to the discussions of your learned body, and have enjoyed the scholarly essays presented and read, which alike reflect credit upon the several authors and honor upon the Medical Profession. Indeed, our visit has been to us a rich intellectual repast which has lasted from day to day without any abatement of pleasure. We have not only been pleased, we have been gratified and edified.

The beautiful welcome by Dr. Jackson; the bold exposition of the Code of Ethics by Prof. Ketchum; and the statesmanlike address of President Weatherly, which should be entitled an annual message instead of an address, have each contributed largely to the interest of the session. We have also been rejoiced to observe the fine decorum of this body; the respectful bearing of members the one toward another, and especially of all, toward the *presiding officer*. Your meeting has been very harmonious. No finer *morale* was ever exhibited in any organized body, whether ecclesiastical, political or legislative; all of which is an unanswerable argument in behalf of the wisdom of your

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laws and the high state of cultivation among you. We are glad to announce to you that the Medical Association of Georgia is now in a prosperous condition. The old feud which so long threatened its dismemberment was amicably adjusted in 1872. Had our laws been the same as yours, there could not have arisen such an unfortunate affair requiring so many years for its settlement. I thank God that all is well with us now. Further, I have the honor to state that I was Chairman of the Committee to revise the *Constitution* and *By-laws* of our Association in 1873, and that we took *that of your Association* for our *standard*, and adopted much of it *verbatim et literatim*.

The limited time allowed by the delay of my appointment precludes the possibility of my speaking at greater length, only to allude briefly to the subject of Public Hygiene. The State of Alabama, in point of natural resources, surpasses any of her sister Southern States. Embracing a territory of over fifty thousand square miles, she presents a variety of soil and climate which adapts her to the growth of everything necessary to the maintenance of man or beast. Nothing is needed but capital and immigration to develop these great resources. Your President, in his annual address, said that Malaria was the principal barrier to their introduction into the State. Heat and moisture are the two factors producing Malaria. We cannot control the former, but we can control the latter to a great extent: sewerage and cultivation will make a favorable impression upon the health of Alabama. The State Legislature at its last session conferred upon this Association the control of the sanitary regulations of the State. The weightiest responsibility was assumed when you accepted the herculean task. You are now made the guardians and conservators of the public health. Now you must labor to unveil the *causa causans* of disease. A new and inviting field is open before you—your opportunities will be great. The responsibility is great, and I hope that you will make great achievements for Science and for humanity. I have no doubt but that you will discharge these onerous duties with credit to the Association and to the great benefit and satisfaction of the public. The Hygiene of the prison will now command your attention. Prisoners are human beings, and especially when held for trial should only be denied their liberty. Humanity cries out against the confinement of our fellow being in a filthy cell, without ventilation. We are all agreed that pure fresh air is indispensable to comfort and health. There is one more thing that is equally important: "God said, let there be light." There is nothing that casts such gloom as darkness. Plants seek the light, and when it is not afforded they become pale, tuberculous and die. Physiological metamorphosis of tissue will not occur in the dark—and still we see children every day that are but shade flowers, housed from morn until night—

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poor, weakly, frail creatures, ready for the grave. I was called not long ago to see such a child, and advised its mother to send it out to walk so that it might enjoy the light, when the weather was fair and the temperature not too high. But she said, that will make it sick, what must I do then? Send it out again and again, and it will get well, was my reply. Mr. President, go with me now to a Southern cotton mill. A boy is entered to-day; he is healthy, well-formed and vigorous. How long will he be so? Worked in-doors among dust from eight to ten hours a day, fed upon coarse food without variety from month to month, and sleeping without sufficient ventilation in summer, and without sufficient bed clothing in the winter; often surrounded by a malarious atmosphere, he will soon loose his color and strength, thus dwarfed in the morning of life, he will fill a premature grave. But sir, let us go now to a fashionable boarding school. A beautiful little girl is entered to-day. She is ten. The bloom is on her cheek, rich, red blood feeds the tissues and she is bright, lively and strong. Her mind is soon over-taxed. She sits with her elbows on the desk before her,—her shoulders begin to pitch forward, she never fully inflates the lungs. Her parents get fine reports of her progress, her mind prematurely developed, her body prematurely decays. But she graduates; she marries, and in a year or more we will go to see her; she lies upon a couch, her eyes are large and lustrous. There is another bloom on her cheeks that means death. There is a babe in the cradle; she is its mother, but she cannot nourish it; it is to be raised by hand. A few months pass; the hot days come; Cholera Infantum also comes. The child is swept away to meet its mother in the spirit world. Now, I have spoken a little of the absurdity of our civilization. It is to be hoped that your *Board of Health* will be able to correct many of these evils. Permit me again, in the name of the Medical Association of Georgia, to thank you gentlemen for your kind courtesies, and to acknowledge the many substantial evidences of the generous hospitality of the local profession of the city of Montgomery.

The President responded to the remarks of the gentleman from Georgia, thanking him for the interesting nature of his speech, and for the interest in medical matters displayed by his presence here, and urged the appointment of Delegates from our Association to meet the Georgia Association at their approaching session in Savannah on the 21st of this month.

On motion of Dr. Guild, Dr. Griggs was requested to fur-

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nish a copy of his remarks for publication in our volume of Transactions.

Dr. Peterson moved that Dr. Ketchum be requested to furnish a copy of his address to the Committee for publication in the volume of Transactions. Adopted.

The regular order was now resumed.

Dr. B. H. Riggs, of Selma, read a report on "Malaria," which may be found in its proper place.

Dr. Cochran made some comments on the report, agreeing in the main with the essayist. He said that the malaria plants or spores, discovered by Salisbury, Mitchell, Bartlett, and others, had been disproven to be the source of malaria; these plants were large, some as large as rape seed. These did not belong to the protomycetes of Lebert; he thought the germs of malaria did belong to this class, and were yet not discovered.

Dr. F. M. Peterson, of Greensboro, was called upon for his Report—"Recent Progress in Gynæcology." Said he had no report on account of sickness in his family just at the time he had set apart to write it out; he had prepared all the material necessary. He asked for the privilege of preparing it and furnishing it to the Committee on Publication. The privilege was granted on account of the peculiar circumstances.

This finished all the regular reports, there being no other reports or reporters present.

Dr. Gaines then, by leave, entertained the Association with his views of Diphtheria, which, on motion of Dr. Bradfield, he was requested to write out and furnish to the Committee on Publication. They may be found in the proper place.

The President now announced the presence, as a visitor, of Dr. J. Ross Thomson, 150 West 37th street, New York.

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Dr. Thomson was introduced and invited to a seat on the floor.

It being known that the venerable Doctor James Guild, of Tuscaloosa, who had been constantly engaged in the practice of medicine in this State for fifty-four years, had with him two reports on surgical cases in his practice, he was now invited to read them to the Association.

One was a report of fourteen cases of Lithotomy, in which he claimed priority in the Median Operation; the other a case of Wound of the Brain.

On motion the two papers were referred to the Publishing Committee, and may be found in the proper place.

The Association now adjourned for the noon recess, during which they partook of an elegant collation at the residence of Dr. W. O. Baldwin.

EVENING SESSION.

HALF-PAST TWO O'CLOCK.

The President in the Chair.

8th Order of Business was now called—the election and installation of officers.

The President appointed Drs. Jackson and Little tellers, and upon proceeding to elect by ballot, as required by the Constitution, the following officers were declared duly elected for the next year:

For President—JOHN J. DEMENT, of Huntsville.

For Vice-Presidents—Dr. PETER BRYCE, of Tuscaloosa, and Dr. FRANCIS M. PETERSON, of Greensboro.

For Censor, for Five Years—Dr. WM. H. ANDERSON, of Mobile.

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Committee on Public Health.

Dr. GEO. A. KETCHUM, of Mobile, for five years.

Dr. EDWARD A. SEMPLE, of Montgomery, for four years.

Dr. EDMUND P. GAINES, of Mobile, for three years.

Dr. CLIFFORD D. PARKE, of Selma, for two years.

Dr. S. D. SEELYE, of Montgomery, for one year.

For Orator—Dr. R. FRASER MICHEL, of Montgomery.

For Alternate Orator—Dr. CALEB TOXEY, of Mobile.

The elections were, by resolution, declared unanimous. Place of meeting, Mobile.

Time of meeting, second Tuesday in April, at 12 M.

When the place of meeting was being discussed, Dr. F. A. Ross, in behalf of the Mobile Medical Society, extended a formal invitation to the Association to meet in that city, which was accepted.

Drs. Phillips and Gaines were appointed a committee to introduce the second Vice-President, Dr. Peterson, the President and first Vice-President being absent.

The proceedings of the House of Counsellors at this session were now read by the Secretary, and may be found in their proper place.

Dr. Ketchum offered the following

RESOLUTION OF THANKS.

Resolved, That the thanks of this Association are due and are hereby tendered to the several railroad companies that have so far contributed to the success of this meeting, by passing the members thereof over their roads at commuted rates.

Resolved, That the heartfelt thanks of this Association are hereby tendered the Committee of Arrangements of the Medical and Surgical Society of Montgomery, the physicians and citizens of Montgomery, for their expressions of warm welcome, graceful courtesies and generous hospitality so freely and liberally offered during the entire session of this Association. They have added

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much to the social pleasure of our meeting, and will long be remembered by all who have been participants of them.

Resolved, That the officers of the United States Court have merited the thanks of this Association for kindly placing their admirable and beautiful room at the disposal of this meeting.

Resolved, That the Association appreciate the full and complete reports of the proceedings of this meeting, published in the Daily Advertiser, and return their thanks to the publishers thereof.

Resolved, That the Association accept with pleasure the proffered invitation from the Arlington Club to attend their entertainment this evening and extend to them their thanks for their thoughtful courtesy.

Resolved, That the thanks of this Association are hereby tendered the President, the Secretary and Treasurer, for the able, satisfactory and efficient manner in which they have severally discharged their duties. Their systematized efforts, and energetic performance of their labors, have contributed much towards promoting the success and harmony of this meeting.

Resolved, That in the preparation of the volume of Transactions for 1874, we recognize a valuable contribution to the Medical Literature of this State, and thank the Committee who had this work in charge, for the handsome manner in which it has been presented to the Profession.

Dr. Little offered the following amendment to the Constitution:

Resolved, That Article 59, Section 13, of the Constitution, be amended so as to read: Every Delegate representing any County Society in the Association shall pay annually into the treasury the sum of two and one-half ($2 50) dollars.

Article 60, same Section, so as to read: Every Counsellor shall pay annually into the treasury the sum of five ($5 00) dollars.

Dr. Seelye, of Montgomery, after some prefatory remarks, setting forth the seemingly increased frequency of occurrence of Bright's Disease in this section of the country, and the uncertainty that involves its treatment, offered the following

PRIZE FOR THE BEST ESSAY ON THE SUBJECT OF BRIGHT'S DISEASE.

I propose to place in the hands of this Association one hundred dollars as a prize for the best essay on the subject of "Bright's Disease." Each paper to

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be forwarded to a Committee appointed by this Association, for the purpose of adjudicating upon the same, which Committee shall have authority to reject all essays if not deemed worthy of the prize; in which case the competition shall be left open for another year. All essays to be forwarded under seal to the Chairman of the Committee and accompanied by a letter containing name and address of the author, and not to be opened until after the adjudication of the Committee is made. The prize essay to be the property of the Association, and to be published in its Transactions.

(I further suggest that accompanying the prize shall be a certificate of the Association, with proper inscription, and seal affixed.)

I would further suggest that the prize offered be wrought into a gold medal, of full value of amount named, less the cost of manufacture, with proper inscription, with a *fac simile* of the seal of the Association engraved thereon.

That all unsuccessful papers be returned by the Committee to their authors, and any of especial merit besides the successful one be honorably mentioned by said Committee.

The competition to be open to the Profession of every State of the Union.

A proper notification of above prize to be given to the Profession at large.

Dr. Weatherly moved that the thanks of the Association be tendered Dr. Seelye for his liberal offer in behalf of Science. Carried unanimously.

On motion of Dr. Cochran, Dr. Seelye was requested to appoint the Committee on his prize.

Dr. Barclay, of Huntsville, offered the following amendment to the Constitution, with the prefixed preamble:

WHEREAS, In the State Medical Society the interest felt by the Medical Profession of Madison county prior to the adoption of the new Constitution is lost by reason of the manner of election and term of office of the Board of Counsellors; and, knowing that harmony will again prevail by a modification of Section 5 of the new Constitution, last clause of Article 12, instead of electing Counsellors by the Board of Counsellors, electing them by joint ballot of Delegates and Counsellors.

Also, changing Article 13, Section 5, by filling vacancies by joint ballot of Counsellors and Delegates.

Also, in Section 5, Article 14, changing the term of office of Counsellors to ten years, electing ten Counsellors every year by joint ballot of Counsellors and Delegates in attendance on Convention.

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Also, to amend Section 13, Article 60, of the Constitution, so as to read: Every Counsellor of the Association shall pay annually into the treasury the sum of five dollars (instead of ten as now.)

Dr. R. Coleman of Limestone, read a report of a case of triple birth, which was referred to the Publishing Committee, and may be found in its proper place.

Letters were read from Drs. M. H. Jordan, of Jefferson, and E. D. McDaniel, of Wilcox, expressive of regrets at their inability to attend this session, and praying that harmony and wisdom may characterize and bless its proceedings.

A dispatch was read summoning Dr. Dement hurriedly to Huntsville, thus preventing his attendance during the session.

A motion to adjourn was now offered.

Before the motion was put Dr. Weatherly made the following valedictory remarks:

Gentlemen of the Association:

Before I vacate the Chair in which I was placed by your kind partiality, you must allow me to return thanks for the uniform respect and forbearance that you have shown me, from the beginning of the session to this its end.

I am happy to be able to state that, so far as I know, we have not had a single instance of wrangling or dissatisfaction.

I remarked to a friend, and I have no hesitation in saying it publicly, that I would have been glad if our State Legislature could have witnessed our deliberations, and could have seen with what order and strict observance of parliamentary rules the business of this Association has been transacted.

It would have been a lesson in economy, at least, that would, if imitated, result in benefit to the State.

And now, with the kindest feeling in my heart for each and every one of you, and wishing you also long life and prosperity, I pronounce the sad word—good-bye.

I introduce to you Dr. Peterson, one of our Vice-Presidents, who, in the absence of the President elect, Dr. Dement, who is unavoidably absent, will be found in every way competent to discharge the duties so unexpectedly thrust upon him.

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Dr. Peterson, presiding, made the following appropriate remarks:

Gentlemen of the Medical Association of Alabama:

Every physician in this Hall must see the embarrassing circumstances which surround me at this moment, called thus suddenly and unexpectedly to preside over this body of intelligent medical men. In the absence of the distinguished gentleman, elected to preside over the interests of the Association for the next twelve months, I return thanks for the honor which you have conferred upon him. Permit me to thank you for the honor conferred upon me in electing me your second Vice-President, and to assure you of my best exertions to promote the success and prosperity of this Association.

In the name of this body I thank our retiring President, who has discharged so faithfully and well the arduous duties of his office during the past year.

I congratulate you upon the harmony and good feeling which have characterized the proceedings of the present session, and upon the large amount of interesting matter which has been brought up by the members.

I congratulate you upon the prospects of the Association. The "Transactions" of the last meeting have received favorable notice and commendation from a large majority of the Medical Periodicals of this country. This is encouraging. I am sorry to have to say, however, that there is still some opposition to this Association in the State.

There are about three thousand physicians in Alabama, and this Association *ought to be much larger and more flourishing.* There is, doubtless, some captious opposition—some opposition to the new Constitution—and there may be some "who despise the day of small things." But we have a great work before us—the organization of Boards of Health in the different counties of the State. We must not allow this opposition to affect us.

Let each member of this Association resolve to do his whole duty—to work and labor for it, and we shall push it forward to a grand success.

Before taking my seat allow me to again thank you.

The Association then adjourned.

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MINUTES OF THE SESSIONS

OF THE

HOUSE OF COUNSELLORS.

The second meeting of the House of Counsellors was held on Wednesday evening, at half-after two o'clock, in the Hall of the Medical and Surgical Society of Montgomery.

Dr. Weatherly in the Chair, Dr. Riggs, Secretary.

The first order of business was the revision of the roll of Counsellors.

The Secretary read a letter from Dr. James Kyle, tendering his resignation on account of impaired health. Accepted.

The following names were dropped from the Roll of Counsellors as required by the Constitution, being delinquent in the payment of dues for one year:

N. P. Marlowe, of Tuscaloosa.

J. B. McMillan, of Evergreen.

A. A. McKittrick, of Evergreen.

Thos. O. Summers, Jr., of Nashville, was dropped in consequence of his removal from the State.

After some general discussion as to rules of order and questions of policy, and after deciding that the resolution passed last year was in conflict with Article 13, Section 5 of Constitution, being of the nature of a nomination of Counsellors, the House proceeded to elect five new Counsellors.

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The following gentlemen were found, upon ballot, to have been duly elected to membership in the House:

Dr. J. B. Gaston, of Montgomery.
Dr. E. Mason, of Wetumpka.
Dr. S. D. Seelye, of Montgomery.
Dr. W. H. Johnston, of Selma.
Dr. Joseph Harrison, of Greenville.

The House then adjourned until 9 A. M. to-morrow.

SECOND DAY.

The House met on Thursday, the 15th April, at 9 A. M.

The first business was the election of new members.

The House then proceeded to ballot as required by the Constitution, until fifteen new members, as follows, were elected, five at a time:

Dr. C. D. Parke, of Selma.
Dr. Richard Inge, of Greensboro.
Dr. N. D. Phillips, of Tallassee.
Dr. J. T. Searcy, of Tuscaloosa.
Dr. T. A. Means, of Montgomery.
Dr. W. W. Wilkerson, of Marion.
Dr. A. A. McKittrick, of Evergreen.
Dr. R. B. Porter, of Courtland.
Dr. W. W. Harrison, of Talladega.
Dr. R. Coleman, of Limestone.
Dr. C. B. Lampley, of Greenville.
Dr. A. T. Henley, of Macon Station.
Dr. W. H. Abernethy, of Allenton.
Dr. S. D. Smith, of Demopolis.
Dr. S. M. Hogan, of Union Springs.

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On motion of Dr. Cochran the Secretary was instructed to notify new Counsellors of their election and to report the proceedings of the House to this session of the Association.

On motion Dr. Thos. O. Summers, Jr., was added to the List of Correspondents.

There being no further business, the House adjourned.

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PRESIDENT'S ADDRESS.

Gentlemen of the Medical Association of the State of Alabama:

I know of no more difficult task than the one imposed by the Constitution of this Association upon the President, of making it his duty to write and deliver an address to its members at each annual meeting. This is not, nor should it be, any ordinary event; and even if I felt competent, I should experience some hesitancy in appearing before such a body of men as I see here to-day—composed as it is of the leading and most scientific members of the medical profession from all parts of the State; men whose reputations are not confined to a single locality, but who are known by their works and contributions to scientific medicine throughout the land; men whom I know to be in earnest in their endeavors for the advancement of the sacred cause of medicine. Need I refer to the last volume of the Transactions of this Association as a proof of what I say as to the character and attainments of the members of this body. That volume, I believe, has received the universal commendation of the profession of this whole country. I have yet to see the first unfavorable criticism upon its contents, or the execution of the work.

This very fact has made me feel still more, in an especial manner, the position which I occupy as your presiding officer. I am sure that our present volume of Transactions will be looked for with great interest, by our brothers in the different States of the Union; and while feeling that I may not be able

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to contribute anything of value to its contents, I have felt, and still feel, that I can rely upon you, the members of the Association, to furnish material of such interest and value for the forthcoming volume, as to compensate for any and all deficiencies in my address, and which will serve to perpetuate, not only your own fame, but will add still brighter laurels to the fame of the profession of Alabama.

Since your last annual meeting, quite an important change has taken place in the organization of the Association itself. The State Legislature, with a wisdom and a generosity far in advance of most State Legislatures, has conferred all the power we asked of it, in constituting this body the State Board of Health, and has shown its willingness to confide the sanitary department of the State government to your keeping. It now depends upon you to show that you are both competent and willing to discharge the trust thus confided to you. This body can and must make itself a power for good in the State. It will behoove you to show the people that the State Board of Health was not established solely for the benefit of Doctors, but that it concerns their dearest and most vital interests. You must let them see that the medical men of Alabama, cherishing the God-like precepts that have been handed down to us from a long line of illustrious predecessors, are willing to ignore self for a time, and to work for the common good of humanity, and for the especial interests of the citizens of this State. You must show them that in a world of self-love and self-interest, where the action of every man is suspected, however good his motive may be; that in a world where even divines do not practice the charity and godliness that they preach, that a body of men, respectable in numbers, large in soul and intellect, is willing to forget self, and work in common for the benefit of those who most probably will

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neither appreciate nor thank it for the good work done for them.

This additional power with which the Association has been endowed, will of course necessitate some changes in the manner of our work; and I would suggest a very early consideration of this matter. To my mind it is a task of great magnitude you have assumed, but having volunteered your services, the promised work must be done, and for the honor of the profession I trust that it will be well done.

As I have said before, for the present this must be a labor of love, and professional pride. Yet I have no doubt but that, if we can show our usefulness to the State, when peace and prosperity again bless our afflicted people, a proper appreciation and remuneration will be awarded the men who are actively employed in carrying out the details of this grand scheme. If this Association, acting as a Board of Health, can not demonstrate to an intelligent community that its services are valuable, and of the highest importance to its welfare, why, then the quicker we abandon the project the better for all parties interested in it.

My present impression is, that we have the best ground work for the establishment of a State Board of Health, that has as yet been projected by any of the States in the Union. But it has to be tested, and it is entirely in the hands of the medical men of the State. It is, however, new machinery, and we must have skillful engineers at the commencement to adjust all its parts into working order. If we do not, we shall most certainly fail. No doubt imperfections will be discovered when we get to the details of every day work, which will have to be corrected and modified as circumstances may demand. I hope and believe that we are destined to furnish a model for all of the States for the future formation of Boards

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of Health. If this should prove true, it will be another step taken toward placing our beloved State in the front rank of her sister States, on the road of progress and improvement.

Let us do our part in showing to the world that we not only have the climate, soil, and mineral productions, but also, that in all the departments of society, Alabama can step boldly forward and challenge the best to competition; and that not least of her greatness consists in the wisdom and enterprise of her medical men.

In thinking over what would be a suitable theme for my remarks before you to-day, varidus and conflicting thoughts have passed through my mind. But I finally concluded that, notwithstanding the able address of my distinguished predecessor of last year (and which, of course, I shall not pretend to emulate), and as the State Board of Health bill had become a law, I would take that as my text, and confine what I had to say to State medicine and preventable diseases, as being of more practical importance to the profession as well as to laymen.

I will not, however, weary you with the history of the rise and progress of State medicine, as most physicians are familiar with the slow headway it has made until within the last few years. It is now, as popular science is becoming more familiar with all classes, assuming its proper place in most civilized countries, and erelong no government will be considered complete, or up to the advanced point of civilization, without it has a regular department of government devoted to State medicine. And this is as it should be; for I can conceive of no subject of more importance to a government than the health of its subjects.

As a general rule, the people greatly misunderstand the medical profession, and strange as it may seem, this miscon-

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ception is not confined to the ignorant, but the educated classes are sadly at fault when it comes to any knowledge of the pretensions and aims of scientific medicine.

The idea with many persons is, that our Medical Associations, instead of being scientific assemblies, designed for the promotion of correct information for the benefit of their members, and for the promotion of the health of our patrons, are simply intended to arrange fee-bills, and to otherwise plot against the health interests of the community. Legislators, who ought to be wise men, look with grave suspicion upon any measure introduced before them which is calculated to advance the interests of doctors, seeming to think that any measure intended to benefit the Profession would militate against the interests of their constituents.

This mistrust and mistake, however, is not altogether the fault of the people, but, to our shame be it said, that a very heavy charge lies at our own doors.

It is the business and the duty of the Medical Profession to teach, and to form public opinion in all matters bearing upon sanitary science, and in fact upon all things of which the public is interested in regard to the science of medicine. We must show them that it is more to their interest than ours to banish quackery from the land. To do this and to make the populace properly respect us, and to be willing to listen to our advice, we must be honest ourselves, and before we make war upon the great army that sails boldly under the gilded colors of quackery, we must move upon that more insidious form of charlatanry existing in the Profession itself. I mean those who belong to the ranks of the regulars, but who cruise into forbidden waters, sailing under the jaunty banner of the black arts.

I have no doubt but that many of you have in your mind's

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eye a professional brother whose success in his business has depended much less upon his knowledge of the art of medicine than in his proficiency in the occult science which has been so happily delineated by my friend Doctor Jackson, of Kentucky, under the name of Black Arts in Medicine.

I would not have you believe either, that all of our brothers who practice these arts are devoid of professional attainments. Many of them (and these are the dangerous ones) could succeed in an honest and legitimate way, but unfortunately when once the habit of practicing these arts is formed, it is hard to be abandoned. Some of these gentry are so expert, that they even try their hands upon the Profession itself. You see it in the newspapers and medical periodicals of the day, where false facts are reported and imaginary cases detailed by men who are thinking entirely of self-advancement, and caring nothing for the injury they may not alone do to their professional brethren, but indirectly to the community at large. These evils we must correct ourselves, before we can hope to occupy in full our proper position, as instructors of the people. I know of no better method of attaining this desirable end, than is afforded by well organized societies, both State and local. In a Republic like ours, where the government leaves (or should leave) the citizens to manage their own affairs, there is no other effectual method of putting forth and carrying forward great improvements, except by combinations between men having a common end in view. We see it exemplified in all business enterprises, and social reforms.

Men and societies are respected very much as they respect and esteem themselves. And when we can organize our doctors in such a manner as to think and act as one man, in every thing concerning the good of the Profession itself, just

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so soon will we be able to make the people understand that the end and aim of the true physician is to always alleviate, and to eradicate, if possible, disease from the land.

If ours is a noble and a scientific calling, calculated to do good, we must make the masses understand it as such. We cannot do this by abusing their ignorance. It would be just as sensible to abuse a child for not knowing how to read, without its first having been taught. All correct knowledge is of slow growth. The great point to consider is, that we plant good seed. We cannot tell how long it may take for them to germinate, but sooner or later effects will follow causes, and the results are frequently astonishing and unexpected to the first originators.

Take, as an example, to quote from Herbert Spencer, "a social appliance, as the printing press, and see how, from the news letter, originally private and written, and then assuming the shape of a private fly leaf to a written private letter, there has slowly evolved this vast assembly of journals, and periodicals, daily, weekly, general and local, that have individually and as an aggregate grown in size, while growing in heterogeneity. Do this, and do the like with all other established institutions, agencies, products, and there will come naturally the conviction, that now, too, there are various germs of things which will, in the future, develop in ways no one imagines, and take shares in profound transformations of society and of its members, transformations that are hopeless as immediate results, but certain as ultimate results."

We may say, that to-day we will work only for ourselves, but at the same time we are forced by laws beyond our control to work for those who are to come after us.

So we may only plant the seed to-day, but the tree that springs from this planting will probably be watered and tend-

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ed by other hands than ours. But if the seed we plant be good, it matters not whose hands train the budding offspring, it will grow and flourish, and though we may not live to see its towering branches, the gentle zephyrs of heaven will murmur strains of sweet music to our memories, and the bright and ever living foliage of the tree of knowledge will serve to remind the living that wise and good men have preceded them, and that great heritages have been left for their fostering care. So to-day, if we do nothing more than to merely direct attention to the all-important subject of preventable diseases, it may be the germ from which great and most important results to the human race may spring.

The subject, you will, of course, at once see, is surrounded with difficulties, which to most men, will no doubt seem to be insurmountable. But the human mind, under the promptings of the divinity within it, is competent to devise means for the accomplishment of almost anything that is even within the bounds of its imagination.

I, however, do not propose that it is possible to do away with all diseases. I merely wish to direct attention to a few of the most common which come under the head of preventable, and which annually hurry thousands to a premature grave.

All of what are called zymotic diseases come under this head, such as small pox, cholera, scarlatina, typhoid fever, dyphtheria, &c.

To show what ravages this class of diseases produces in England, one of the most enlightened countries in the world, I will quote from Dr. Curtis' Presidential Address before the London Society in 1874.

He says that "A statement expressed only in figures, when it deals with numbers larger than those of which we have

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habitual practical experience, gives rise to but faint conceptions in the mind. But even when thus stated, the mortality from the zymotic diseases is startling. Taken collectively during five successive quinquennial periods, from 1847 to 1871, these diseases in the period from 1847 to 1857 destroyed the lives of 512,261 persons, out of a total mortality of 2,028,367, or occasioned one death in 3.96. From 1852 to 1856 they destroyed 472,690 out of 2,082,346, or one in 4.4. During the whole twenty-five years they caused the loss, in round numbers, of two millions and a half of lives, out of a total mortality of 11,000,000, or one death in 4.48, the exact figures being 2,482,538 and 11,153,063. If we add another half million of deaths for another five years, we arrive at the result that three millions of people, a number approximately equal to the population of London, are killed by zymotic diseases in the course of each generation."

Mr. Simon, who is at the head of the sanitary department of Great Britain, in his last report places the death rate in England from preventable diseases at one out of every three deaths. This is a terrible array, especially when we think that the cause of most of these deaths might be removed. In other words, these 3,000,000 of deaths were caused in England by diseases that clearly come under the head of preventable diseases—diseases that sanitary medicine will, I hope, in the course of time entirely eradicate from all civilized communities. The mischief, however, does not stop with the dead; for we have to look to the impaired constitutions of those affected with one of these diseases, but who escapes death; to the innumerable diseases propagated by inheritance from this vitiated stock, and to the burden imposed upon the State of caring for those who have been rendered unable to care for themselves.

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In speaking further upon this subject, Dr. Carter remarks, and what he says is applicable to this, as well as to all other countries: "Upon the whole, then, I think I am entitled to say that the effect of preventable diseases in this country (England) every year, is to inflict upon the community a pecuniary tax of not less than three millions sterling, and probably of much more than that sum; to sicken at least six hundred thousand persons; to destroy prematurely at least one hundred thousand lives, many of them of the highest value; to cripple in some way or to some extent, in mind or body, an unknown number of victims, leaving them to be more or less incumbrances to their own generation, and to be the progenitors of children who will hand down an inheritance of sickness or debility to generations yet to come; and lastly, besides causing an incalculable amount of merely mental sorrow, to entail physical misery, destitution, social degradation, and even lapse into crime, of many of those whose mainstay in life has been destroyed. It is often a wholesome mental exercise, with reference to arrangements to which we have become accustomed, to stand for a moment, as it were, aloof from them, and to ask ourselves how we should regard them if they were offered for our acceptance for the first time. I think it can not be doubted, if we could place in this light the calamities and evils that I have tried in faint outline to describe, that we should all look upon them as something too monstrous to be endured with patience. We should say that they throw into utter insignificance most of the so-called great questions with which politicians occupy themselves, and that they imperatively demand the most strenuous efforts of the highest statesmanship for their removal. But so absolute is the dominion of habit over the human mind, that we now suffer these evils to flourish, practically unchecked, and make scarcely a single effort to control them."

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Many intelligent people thinking, as one of our prominent and influential Senators remarked to me, "that he was opposed to all thought or legislation upon the subject of hygiene," from the fact that he was of the hard-shell belief, and thought that "what was, had to be, and that there was no use trying to legislate against evils of this sort."

The health and lives of the people were not worthy of the consideration of this wise Senator, yet he was probably willing to spend days in trying to divorce a couple, or to make a man out of a boy before nature willed it. Many intelligent people in this enlightened age agree with this astute Senator, and believe that sickness of all sorts is directly attributable to an angry God, as punishment for special sins.

In one sense of the word this may be true, but not as generally understood. Diseases of all sorts come as consequences of violations of natural laws, and are punishments for such violations. But many people violate these laws from their ignorance, and suffer equally with those who violate knowingly. People are violating these natural laws every day, who would not do so any more than they would disobey civil laws, if they understood them. It is the duty of this Association, through the State Board of Health, to teach the people some of these laws governing diseases. Of course the work will be slow at first, but great truths are always slow of development; so that we must not be discouraged at repeated failures. To show what can be done, and at the same time to illustrate how slow true knowledge is in implanting itself into the minds and natures of mankind, I will refer to one or two instances in English medical history.

These facts will also serve to show what is constantly taking place all around us every day. Valuable lives being lost simply for the want of a little knowledge, and some one to put

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in force that knowledge after it is obtained. During the Chinese expedition in 1841, a mortality at the rate of three or four per cent. a day, in a crew of three hundred, arose from drinking *muddy water* from the paddy fields, though either by boiling it or by filtering it through charcoal much of the mortality might have been prevented.

Another remarkable illustration of persistence in wrongdoing, after the right has been fully demonstrated, is the history of the treatment of scurvy. "It was in the year 1593 that sour juices were first recommended by Albertus, and in the same year Sir R. Hawkins cured his crew of scurvy by lemon juice. In 1600 Commodore Lancaster, who took out the first squadron of the East India Company's ships, kept the crew of his own ship in perfect health by lemon juice, while the crews of the three accompanying ships were so disabled that he had to send his men on board to set their sails. In 1636 this remedy was again recommended in medical works on scurvy. In 1757 Dr. Lind, the physician to the naval hospital at Hasler, collected and published in an elaborate work these and many other proofs of its efficacy. Nevertheless, scurvy continued to carry off thousands of sailors. In 1780, two thousand four hundred in the Channel fleet were affected by it; and in 1795 the safety of the Channel fleet was endangered by it. At length, in that year, the admiralty ordered a regular supply of lemon juice to the navy. That two centuries after the remedy was known, and forty years after a chief medical officer of the government had given concise evidence of its worth, the admiralty, forced thereto by an exacerbation of the evil, first moved in the matter. And what had been the effect of this amazing perversity of officialism? The mortality from scurvy this long period had exceeded the mortality by battles, wrecks, and all casualties of sea life put together."

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Verily, these wise officials had the same hard-shell belief as my friend the Senator, yet they had to yield to the stern logic of accumulated facts; and now scurvy is almost an unknown disease. Consumption, which though largely hereditary, has recently been shown by the Massachusetts Board of Health to be greatly dependent for its development upon insufficient drainage and unwise location of dwellings. Typhoid fever has been shown, both in England and in this country, to be very greatly dependent for its development and propagation upon causes which could easily be prevented—such as impure milk, bad drainage, impure water, &c.

Thousands of valuable lives are annually sacrificed by this disease, which might easily have been preserved by a common sense observance and enforcement of well known sanitary precautions. We are surrounded on all sides by causes of disease, which might be easily avoided. The water and milk that we drink frequently carry the seeds of fatal disease into our systems. Contamination of drinking water is probably one of the most frequent causes of typhoid fever and cholera, and probably of many more diseases. No one can say that this cannot be easily remedied, and it will be, as soon as medical men go to work in earnest, to inform themselves first, and then the people, of plain and palpable causes of disease that might be easily removed.

It will no doubt be difficult for doctors to convince the people that they are in earnest in trying to show how disease can be prevented, and human life prolonged.

It is hard for the ignorant (and alas most men are ignorant of the ends and aims of the true physician) to understand our position in regard to this matter. They reason that, as we live upon their infirmities, of course we ought to wish to see those infirmities increase, instead of using means by

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which they could be diminished. They cannot understand that high and unselfish feeling of the conscientious physician which makes him cry out when he sees human life every day being sacrificed to causes that might easily be set aside by the slightest attendance to hygienic laws.

As it is the business, the duty and the pleasure of the clergyman to advise in all matters relating to the spiritual welfare and health of his flock, so it is the duty and pleasure of the physician to take charge and direction of the physical health of man. And no matter how we are reviled and misunderstood, we are bound to do our duty, and as a general rule, I believe the medical profession throughout the world is doing its full duty. It is probably to-day doing more for the general good of humanity than all other professions put together, and sooner or later, the world will understand this, and accord to us all that we are entitled to.

Already, the mortality from preventable diseases is on the decrease in many localities, by the adoption of sanitary laws. In some portions of England, and in Geneva, the mortality has been reduced twenty per cent. in the last ten years. Aside from making individual localities healthy, there are several very destructive diseases that ought either to be entirely stamped out of existence or confined to very narrow limits. Cholera, for instance, ought never to prevail as an epidemic in this country. In fact, with our knowledge of how it is propagated, it should never be allowed to leave the jungles of India. I am satisfied that when the general, and State governments thoroughly organize sanitary departments that this fearful disease will never again prevail as an epidemic in the United States.

Recently our sister city of Mobile has had an epidemic of small pox. It ought not to have had it. Compulsory vac-

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cination would probably soon eradicate this scourge from the face of the earth. Yellow fever, which is now conceded to be an exotic by the leading physicians of this country, should never be permitted to visit our shores. If our governments, general and State, will act in concert and establish and enforce effectual quarantine laws, I firmly believe that this great incubus to the growth and prosperity of our Southern cities will never again take up its deadly march from city to city, enveloping them in its dusky robes of mourning.

The loss in life and property, caused by one of these fearful epidemics, would pay all the expenses for the enforcement of proper quarantine laws for years to come.

The diseases that I have mentioned, I have no doubt, in the course of time, it may be in the far future, so far as this country is concerned, will be unknown, as regards personal experience, and only be read of as matters of history by the profession.

Typhoid and scarlet fevers should also be greatly circumscribed in their ravages. Every case of a self-propagating disease should be at once reported and isolated, and all subjects liable to be infected should be rigidly excluded from contact with the patient so affected. Just think of how many epidemics that might be checked by this method, and as a result how many valuable lives, and how much money might be saved to the State. You need look no farther than Mobile or Montgomery to see what damage has been done to their prosperity by the admission of single cases of yellow fever into their limits.

Leaving this branch of my subject, if I were asked what was probably the greatest drawback to the growth in material prosperity and population of Alabama, I would answer that it was not bad government nor the effects of the war, nor

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civil rights, nor demoralized labor. All of these things are, and have been, great evils, but time will soon overcome them. The great, and in my opinion, the paramount obstacle to the rapid improvement and prosperity of the State, is malaria, that subtle poison that has stolen the lives of so many valuable citizens from the fairest portion of the State during the last few years. It still has full sway; absolutely nothing is being done to check the progress of this insidious poison that is every day sapping the energies, and taking the lives of our people. Now, many will contend probably, that malarial diseases do not come under the head of preventable. But history will sustain me in saying that if malaria cannot be entirely suppressed, its effects can, in a great measure, be gotten rid of by proper attention to drainage, cultivation, &c. And I contend that it is cheaper for us to fight and to throttle this great enemy to our lives and prosperity than it is to yield an apathetic submission to its sway.

It may be true that we do not as yet know exactly what malaria is, but that is not important. It may be gaseous, animalculæ or vegetable spores; no matter, we know that certain conditions have to come together before it is generated in sufficient force to be formidable. We do know most of these conditions, though we may not be able to say for certain what factor is most important in its production. Now the question arises, are any or all of thes factors under the control of man? I say unhesitatingly all possibly are, save one—(heat, and that of itself cannot produce malaria.)

I firmly believe that if a thorough system of drainage (and as a matter of course cultivation would follow) was put in force, the greater portion of our State that is afflicted with this scourge would be made perfectly healthy. I am convinced that it would be wise policy, and a real measure of

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economy for the State government to adopt some system looking to the gradual drainage of those portions of the State most subject to malarial influences. If only one county was rescued every five years the end would be reached before a great while, and the increase in population, and the value of property, would more than compensate for any outlay by the State from the increased revenue coming in from taxation. The saving to the people of the money spent for quinine alone would probably pay for the work done. In the present impoverished condition of the individual citizen, my own opinion is that the government should take charge of this work. Something must be done, and this Association should mature and recommend some feasible plan for the rescue of our citizens from this insidious poison. This done, no earthly influence can prevent Alabama from springing forward with the power of a young giant on the road to prosperity and happiness. We can then say with confidence to the world, come to our State, and we will suit you in climate and soil, but above all other things, in health. The timid, no doubt, will say that the idea of getting rid of malaria is chimerical, the task too herculean to be undertaken. It will be a huge undertaking, but it can and it should be accomplished. Suppose it does take time. Nothing of very great importance is ever done in a hurry. The great point is, to commence, and if the end to be attained is worth the toil, it will surely come.

You all know that ancient Rome, from being one of the most unhealthy, was made one of the most healthy, and as a consequence was the influential power in the world at that time, by a scientific system of sewers. It of course took time and money for its accomplishment, but the result was ample compensation for all outlay of time and money. I hope this

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subject will receive the most serious attention from each and every member of this Association. If you can devise some means for the rescue of certain portions of the State from the influence of malaria, and also to prevent yellow fever from ever again planting its seed upon our soil, you will have done enough to forever enshrine the Medical Association of the State of Alabama in the hearts of the people, and will have erected a monument to your memories more enduring than brass or granite, and one that will withstand all the storms of an ever-changing world.

I now come to the last head of my address, and I must say that I approach it with no little feeling of trepidation, for I may tread upon debatable ground, and enter fields in the moral vineyard, that probably many may think I have no right to touch. But who dares say where scientific investigation shall stop? Or who shall dispute the proposition that the divinity prompting the human mind may not choose to purify humanity by means of the teachings of science? I lay down the proposition then, and assert without the fear of successful contradiction, that very many of the moral diseases with which poor humanity is afflicted, come directly under the head of preventable diseases.

Physicians have long been aware of the tendency, and I might say of the certainty of the transmission of hereditary diseases, and bodily peculiarities. I will quote one instance to show how physical infirmities are transmitted from generation to generation.

Edward Lambert, whose whole body, except the face, palms of the hands, and soles of the feet, was covered with a sort of shell, consisting of horny excressences. He was the father of six children, all of whom presented the same anomaly at the age of six weeks. The only one of them who lived trans-

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mitted the peculiarity to all of his sons, and this transmission, passing from male to male, persisted through five generations."

I will now mention one other case, to illustrate the equal liability of transmission of moral peculiarities. A stray waif, I believe in the Godly State of Massachusetts, thrown upon the world with no one to train or care for her, left to grow to womanhood amidst poverty and vice, has been found by a physician, whose name I am sorry to have forgotten, but who put himself to the trouble of tracing her history, to have been the source from which six hundred criminals, drunkards, lunatics and imbeciles had descended. Just think for a moment upon this startling fact, and think also, if something might not be done to suppress the source of such polluting streams of depravity. But these six hundred criminals were not the only ones affected. The father of a loving and innocent family may have been murdered by one of them, or an innocent and guileless woman may have been chained as a wife to one of them, becoming corrupted herself, and assisting still farther in propagating these moral defects upon the world.

Now it may be said, that this is just a development or an illustration of that old and true gospel law, that the sins of the father shall be visited upon the children even unto the third and fourth generation.

The question is not, however, as to the facts, but as to whether there is no means to be used for preventing these wicked fathers from transmitting their iniquities to posterity. Can the science of sociology propose no plan by which the world could be made better and more christian-like by the prevention of the transmission of these horrible moral diseases from generation to generation? The plain question is,

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should one insignificant individual be allowed to taint the moral natures of hundreds of his or her descendants?

Science is making powerful and telling aggressions upon all forms of ignorance and superstition. It is constantly entering and developing new fields for thought and work, and ere long these moral questions will be taken up, and where clear demonstration follows upon reason, some action for good will result. False theories are every day being overthrown, as has always been the case. The world is constantly progressing, and this kind of evolution, at least, has been going on since the beginning. Nature's laws are fixed and unchangeable, and a gradual unfolding is taking place, effect following cause, and consequences resulting from previous motors, having their origin probably at the very dawn of creation. Every day we see things taking place around us, and the thoughtless wonder why such and such an occurrence happened. Yet, if we look back with the eye of reason we can always get at the first starting point, just as the statistician did in tracing back the six hundred criminals to one progenitor. Every action is followed by its legitimate result, the good as well as the bad. Hence, the importance of setting on foot correct theories and actions, and of controlling the bad in some way or other. It is impossible to foresee what may be the consequences of our simplest acts. A little pebble thrown into the ocean, puts in motion a wavelet that starts another wavelet until the whole broad ocean may feel the ripple first started by the little pebble. The moral infirmities inherited from our ancestors are constantly seen and felt in every day life. One great outlet is found in the persons of law-makers, whose moral and intellectual deformities are transmitted to posterity in the shape of bad laws and bad government.

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To get back, however, a little nearer my subject, I say that much of the crime existing in the world is the direct result of successive hereditary faults, propagated through improper marriages.

When we teach the people to know and to understand that not only bodily diseases and deformities, but even little mental peculiarities, are handed down through all time, and are known as characteristics of certain families, and worst of all, that the tendency to commit certain crimes is also implanted in the natures of some people by means of this law of inheritance, it will be one step toward that grand evolution from an inferior to a superior state of morals. Very much of the crime now existing in the world can be traced back to the ancestors of the criminals, increased and intensified by intermarriages with persons having the same moral proclivities, tendencies to walk in an evil way, so strong that the individual is utterly incapable of resisting by his own single effort. I am not sure but that mental and moral peculiarities are more apt to be transmitted than mere physical diseases. You all know that it is difficult for some people to tell the truth, and that others will steal, and it matters not how often they are detected and punished, it does not cure the habit; and so with the worst forms of vice.

This is a vast field for thought, and one that calls for mature consideration at the hands of the profession. That improvement will come, sooner or later, through the action and advice of wise medical men upon this subject, I feel very sure.

It may seem somewhat chimerical even to physicians, at this time, for any one to announce that the moral health of the world is to be improved, not only by the willing, but if necessary by the forcible observance of well known physiological

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and sanitary laws. I firmly believe, however, that at some future time this will be the case.

Suppose it does take centuries to arrive at a good result. What is a century in the grand conception of the Creator of the Universe. If it has taken millions of years for the world to arrive at its present state of improvement, what may it not be a few centuries hence? Standing here to-day, and casting a mental horoscope of the remote future, with the far reaching eye of imagination I can see our beloved art towering far above all other arts or callings. I see it enshrined in the hearts of all the people, and through its influence I see an evolution taking place almost as startling as that told us by Darwin of what took place in the first dawn of creation, when, according to his theory, man's first entrance upon the world's stage was nothing save a little bit of jelly. I see the physical man, grand in his proportions, almost exempt from bodily suffering, his mind wonderfully strengthened and God-like in its perceptions. Mysteries that have no solution to us of to-day, and to our feeble brains are utterly unknowable, will then be as plain as the sunlight dancing upon the mountain's snowy summit. I can see him good and pure, made so by the long observance of well known sanitary laws that are now almost unknown, and are totally unobserved by the people.

This, then, is to be our mission. We are to be the instructors in this great branch of art, that is destined to do so much for the good of the human race. Our profession has been called holy and noble, and so it is; for its great business is to protect and prolong human life. The battle will no doubt be fierce and long, but truth and right will eventually prevail. The duty of the profession, then, is two-fold. It is to show how physical disease can be prevented or ameliorated, and also that a correct observance of certain laws, if applied to

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marriage, will prevent or at least diminish the amount of crime in the world. Is it too much to expect that in the course of time some effectual means will be found of preventing notoriously bad people from propagating their iniquities to posterity? If it can not be accomplished by natural selections, why, then I say, let the strong arm of the law interfere. Better for the liberty, yea, even for the life of one individual to be sacrificed, than to have a dark and poisoned stream of vice and infamy slowly oozing its slimy way down the course of time, blighting and corrupting with the exhalation of its nauseous vapors every thing that comes near it, until it loses itself in the vast sea of eternity.

It is a question in sociology which must be considered, and probably pondered over for a long time, before any definite action is taken. But we may cast the pebble to-day that will lash the waves of the moral ocean into billows of improvement, that will break upon the pure sands of a new and regenerate world ages hence.

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ANNUAL ORATION:

AN ADDRESS ON MEDICAL ETHICS.

BY GEO. A. KETCHUM, M. D., OF MOBILE.

Mr. President and Gentlemen of the
Medical Association of the State of Alabama:

When, at our morning session on yesterday, it was announced that the Orator and the Alternate Orator appointed at the meeting of last year were both absent, and that in consequence we would be compelled to omit this usually interesting portion of our annual programme, the announcement was the occasion of much regret and disappointment. But my valued friend, Dr. R. F. Michel, who in every emergency is so full of expedients, suggested that he saw a happy (to him) issue out of the difficulty, and very pleasantly proposed that I should be appointed to fill the place of the gifted Sommers in his absence, and play the Orator before you and the large audience of ladies and gentlemen whom he felt would honor us by their attendance on the occasion. What was considered at the time as an exhibition of the proverbially playful good humor of my venerable friend was made a serious matter of fact last evening, by the public announcement at the conclusion of the President's address, and by the like an-

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nouncement in this morning's papers, that the Annual Oration would be delivered by me this evening, and that the public generally, and the ladies particularly, were invited and requested to attend. This, of course, left me no loop-hole of escape; and not having had a moment during the continuous session of our Association for preparation, I must beg your indulgence, ladies and gentlemen, whilst I ask permission to repeat an address on Medical Ethics, prepared especially for a class of medical students, at their request, on the occasion of the anniversary of the "Nott Medical Society," connected with the Medical College of Alabama.

Ethics may be defined to be "the science of moral philosophy, which teaches men their duty, and the reasons for it." Medical ethics must conform to and be based upon this same principle of right and reason, to be morally binding, and bestow blessings and good upon the profession and upon the world. Medical ethics is the profession's moral law, founded on truth and justice, intended to promote professional honor, to elevate the standard of professional excellence, to increase the sphere of professional usefulness, and thus to subserve the cause of humanity. It is that code of honor by which every true and worthy member of the medical profession feels himself bound and guided in his intercourse with his brother, his patient, and the general public.

It is that expression of feeling and sentiment that gives to our profession its ideal of complete and thorough oneness; that makes a scientific truth for one, a scientific truth for all; which gives all a common estate in the facts, aims and purposes that belongs to the science and practice of medicine; that acknowledged law of the profession, which, dictated by the true spirit of a scientific and humane brotherhood, becomes at once the interpreter and sign of the elevated char-

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acter and lofty purposes of the science; and the rule by which the individual professor's claims to merit, to honor, and to professional standing, must be measured.

It is that expression of manly sentiment, and intense humanity springing from broad and genial sympathies, which should be, and I trust is, the animating principle of the very soul of the profession; and without which no learning, no skill, not even usefulness itself, can rescue it from sure and speedy degradation.

It is that voice from the masters of our science which proclaims, in unmistakable language, that the first and last requisite of professional life is not power of intellect *alone* (however valuable that may be); nor those acquisitions of knowledge that enrich our thoughts, and give thoroughness and power to our intellectual resources; but those other and finer qualities of generous manhood, of gentlemanly courtesy and professional dignity, which, as subtle and pervading essences, enter with its healthy vigor and animating impulses, to harmonize all rough and discordant elements, and make professional intercourse a brotherly re-union.

It is this link which binds the consistent representatives of medical science in one noble brotherhood—and which makes those who are true and faithful to its requirements, feel that their allegiance to the true professional spirit is paramount to all selfish considerations, and that the claims of that science where the interests of life and death meet continually—that science with whose undisclosed mysteries they must ever wrestle for the well-being of mankind—demand that each and every one of its professors, guided by its code of ethics, should add to its purity and its power, and thus aid by its disinterested and generous sacrifices in the cause of humanity, and its large outgoing of sympathy, kindness and usefulness, to

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diffuse through communities, through states, and through nations, that affection, that respect, and that consideration which its lofty aims and humane purposes justly entitle it to expect.

It was such views of the high mission of our science, and the elevated character and honorable purposes that should characterize its professors, that suggested to the earliest fathers of medicine the necessity of a code of ethics as a professional guide.

Looking back to the first chapter in the History of Medicine—at that point that separates mythical from scientific history, four hundred years before Christ—we find that the great father of medicine, the immortal Hippocrates,—immortal, because his name must live

> "When seas shall waste, the skies in smoke decay;
> Rocks fall to dust, and mountains melt away."

It will live in the memory of medical men, because they can not forget that his mighty mind perceived the great defects in the systems of all his progenitors in medicine. He grappled with the difficulties and mysteries that encumbered their systems, and adding reason and argument to the uncertain and mythical rules of Egypt and Greece, exalted medicine to the dignity of a science. He laid *the* foundation of medical science, on which this day we have the honor to practice; and to him we are indebted for the first code of ethics; his celebrated oath was the first model upon which all subsequent codes have been based. It is still known as the

HIPPOCRATIC OATH.

"I swear by Apollo the Physician, and Æsculapius, and Health, and All Heal, and all the gods and goddesses, that according to my ability and judgment I will keep this oath and this stipulation: To reckon him who taught me this Art

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equally dear to me as my parents; to share my substance with him, and relieve his necessities if required; to look upon his offspring in the same footing as my brother's, and to teach them this art, if they shall wish to learn it, without fee or stipulation; and that by precept, lecture, and every other mode of instruction, I will impart a knowledge of the art to my own sons and those of my teachers, and to disciples bound by a stipulation and an oath according to the law of medicine, but to none others. I will follow that system of regimen which, according to my ability and judgment, I consider for the benefit of my patients, and abstain from whatever is deleterious and mischievous. I will give no deadly medicine to any one, if asked, nor suggest any such counsel. With purity and holiness I will pass my life and practice my art. Into whatever houses I enter, I will go into them for the benefits of the sick, and will abstain from every voluntary act of mischief and corruption. Whatever in connection with my professional practice, or not in connection with it, I see or hear in the life of man, which ought not to be spoken of abroad, I will not divulge, as reckoning that all such should be kept secret.

"While I continue to keep this oath inviolate, may it be granted to me to enjoy life and the practice of the art, respected by all men, in all times! But should I trespass and violate this oath, may the reverse be my lot!"

As the science of medicine has grown and expanded—as its professors have entertained continually more enlarged views of the scope of its influence upon civilization, progress, and even the fate of nations, inasmuch as the fate of nations must ultimately depend upon the health and strength of their population—as day by day they saw that it was asserting more clearly its claims to be considered an exact science, and felt

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the importance in this view of having each individual member of this scientific profession, reflect his due proportion of honor upon the art that honored him—they framed their different codes of ethics. There has been none, however, that combined all the admirable qualities of truth and justice, high moral tone, and completeness of detail, that is found in the Ethics of the American Medical Association, and adopted by the several State Medical Associations and local Medical Societies.

I feel that I must consider it a most important part of this discourse, to read to you this splendid compendium of the laws governing a physician's professional life Let its several provisions impress you deeply—lose not a word of its high moral tone, and its just and honorable requirements—and believe me, that your professional respectability and good standing will in no small degree depend upon how you may in your daily professional life serve and illustrate its principles.

CODE OF MEDICAL ETHICS.

OF THE DUTIES OF PHYSICIANS TO THEIR PATIENTS, AND OF THE OBLIGATIONS OF PATIENTS TO THEIR PHYSICIANS.

ART. I.—*Duties of Physicians to their Patients.*

SECTION 1. A physician should not only be ever ready to obey the calls of the sick, but his mind ought also to be imbued with the greatness of his mission, and the responsibility he habitually incurs in its discharge. Those obligations are the more deep and enduring, because there is no tribunal other than his own conscience to adjudge penalties for carelessness or neglect. Physicians should, therefore, minister to the sick with due impressions of the importance of their office; reflecting that the ease, the health, and the lives of those committed to their charge, depend on their skill, attention and fidelity. They should study, also, in their deportment, so to unite *tenderness* with *firmness*, and *condescension* with *authority*, so as to inspire the minds of their patients with gratitude, respect and confidence.

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SEC. 2. Every case committed to the charge of a physician should be treated with attention, steadiness and humanity. Reasonable indulgence should be granted to the mental imbecility and caprices of the sick. Secrecy and delicacy, when required by peculiar circumstances, should be strictly observed; and the familiar and confidential intercourse to which physicians are admitted in their professional visits, should be used with discretion and with the most scrupulous regard to fidelity and honor. The obligation of secrecy extends beyond the period of professional services; none of the privacies of personal and domestic life, no infirmity of disposition or flaw of character observed during professional attendance, should ever be divulged by the physician except when he is imperatively required to do so. The force and necessity of this obligation are, indeed, so great, that professional men have, under certain circumstances, been protected in their observance of secrecy by courts of justice.

SEC. 3. Frequent visits to the sick are, in general, requisite, since they enable the physician to arrive at a more perfect knowledge of the disease,—to meet promptly every change which may occur, and also tend to preserve the confidence of the patient. But unnecessary visits are to be avoided, as they give useless anxiety to the patient, tend to diminish the authority of the physician, and render him liable to be suspected of interested motives.

SEC. 4. A physician should not be forward to make gloomy prognostications, because they savor of empiricism, by magnifying the importance of his services in the treatment or cure of the disease, but he should not fail, on proper occasions, to give to the friends of the patient timely notice of danger when it really occurs; and even to the patient himself, if absolutely necessary. This office, however, is so peculiarly alarming when executed by him, that it ought to be declined whenever it can be assigned to any other person of sufficient judgment and delicacy. For the physician should be the minister of hope and comfort to the sick; that by such cordials to the drooping spirit, he may smooth the bed of death, revive expiring life, and counteract the depressing influence of those maladies which often disturb the tranquility of the most resigned in their last moments. The life of a sick person can be shortened not only by the acts, but also by the words or the manner of a physician. It is, therefore, a sacred duty to guard himself carefully in this respect, and to avoid all things which have a tendency to discourage the patient and to depress his spirits.

SEC. 5. A physician ought not to abandon a patient because the case is deemed incurable; for his attendance may continue to be highly useful to the patient, and comforting to the relatives around him, even in the last period of

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a fatal malady, by alleviating pain and other symptoms, and by soothing mental anguish. To decline attendance under such circumstances, would be sacrificing to fanciful delicacy and mistaken liberality, that moral duty which is independent of and far superior to all pecuniary consideration.

SEC. 6. Consultations should be promoted in difficult or protracted cases, as they give rise to confidence, energy and more enlarged views in practice.

SEC. 7. The opportunity which a physician not unfrequently enjoys of promoting and strengthening the good resolutions of his patients, suffering under the consequences of vicious conduct, ought never to be neglected. His counsels, or even remonstrances, will give satisfaction, not offense, if they be proffered with politeness, and evince a genuine love of virtue, accompanied by a sincere interest in the welfare of the person to whom they are addressed.

ART. II.—*Obligations of Patients to their Physicians.*

SEC. 1. The members of the medical profession, upon whom is enjoined the performance of so many important and arduous duties towards the community, and who are required to make so many sacrifices of comfort, ease and health, for the welfare of those who avail themselves of their services, certainly have a right to expect and require that their patients should entertain a just sense of the duties which they owe to their medical attendants.

SEC. 2. The first duty of a patient is, to select as his medical adviser one who has received a regular professional education. In no trade or occupation do mankind rely on the skill of an untaught artist; and in medicine, confessedly the most difficult and intricate of the sciences, the world ought not to suppose that knowledge is intuitive.

SEC. 3. Patients should prefer a physician whose habits of life are regular, and who is not devoted to company, pleasure, or to any pursuit incompatible with his professional obligations. A patient should also confide the care of himself and family, as much as possible, to one physician; for a medical man who has become acquainted with the peculiarities of constitution, habits and predispositions of those he attends is more likely to be successful in his treatment than one who does not possess that knowledge.

A patient who has thus selected his physician should always apply for advice in what may appear to him trivial cases, for the most fatal results often supervene on the slightest accidents. It is of still more importance that he should apply for assistance in the forming stage of violent diseases; it is to a neglect of this precept that medicine owes much of the uncertainty and imperfection with which it has been reproached.

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SEC. 4. Patients should faithfully and unreservedly communicate to their physician the supposed cause of their disease. This is the more important, as many diseases of a mental origin simulate those depending on external causes, and yet are only to be cured by ministering to the mind diseased. A patient should never be afraid of thus making his physician his friend and adviser; he should always bear in mind that a medical man is under the strongest obligations of secrecy. Even the female sex should never allow feelings of shame or delicacy to prevent their disclosing the seat, symptoms and causes of complaints peculiar to them. However commendable a modest reserve may be in the common occurrences of life, its strict observance in medicine is often attended with the most serious consequences, and a patient may sink under a painful and loathsome disease, which might have been readily prevented had timely intimation been given to the physician.

SEC. 5. A patient should never weary his physician with a tedious detail of events or matters not appertaining to his disease. Even as relates to his actual symptoms, he will convey much more real information by giving clear answers to interrogatories, than by the most minute account of his own framing. Neither should he obtrude upon his physician the details of his business nor the history of his family concerns.

SEC. 6. The obedience of a patient to the prescriptions of his physician should be prompt and implicit. He should never permit his own crude opinions as to their fitness, to influence his attention to them. A failure in one particular may render an otherwise judicious treatment dangerous, and even fatal. This remark is equally applicable to diet, drink and exercise. As patients become convalescent, they are very apt to suppose that the rules prescribed for them may be disregarded, and the consequence, but too often, is a relapse. Patients should never allow themselves to be persuaded to take any medicine whatever, that may be recommended to them by the self-constituted doctors and doctresses who are so frequently met with, and who pretend to possess infallible remedies for the cure of every disease. However simple some of their prescriptions may appear to be, it often happens that they are productive of much mischief, and in all cases they are injurious, by contravening the plan of treatment adopted by the physician.

SEC. 7. A patient should, if possible, avoid even the *friendly visits of a physician* who is not attending him; and when he does receive them, he should never converse on the subject of his disease, as an observation may be made without any intention of interference, which may destroy his confidence in the course he is pursuing, and induce him to neglect the directions prescribed to

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him. A patient should never send for a consulting physician without the express consent of his own medical attendant. It is of great importance that physicians should act in concert; for, although their modes of treatment may be attended with equal success when employed singly, yet conjointly they are very likely to be productive of disastrous results.

SEC. 8. When a patient wishes to dismiss his physician, justice and common courtesy require that he should declare his reasons for so doing.

SEC. 9. Patients should always, when practicable, send for their physician in the morning, before his usual hour of going out; for, by being early aware of the visit he has to pay, during the day, the physician is able to apportion his time in such a manner as to prevent an interference of engagements. Patients should also avoid calling on their medical adviser unnecessarily during the hours devoted to meals or sleep. They should always be in readiness to receive the visits of their physician, as the detention of a few minutes is often of serious inconvenience to him.

SEC. 10. A patient should, after his recovery, entertain a just and enduring sense of the value of the services rendered him by his physician; for these are of such a character, that no mere pecuniary acknowledgment can repay or cancel them.

OF THE DUTIES OF PHYSICIANS TO EACH OTHER, AND THE PROFESSION AT LARGE.

ART. I.—*Duties for the support of Professional Character.*

SEC. 1. Every individual, on entering the profession, as he becomes thereby entitled to all its privileges and immunities, incurs an obligation to exert his best abilities to maintain its dignity and honor, to exalt its standing, and to extend the bounds of its usefulness. He should, therefore, observe strictly such laws as are instituted for the government of its members,—should avoid all contumelious and sarcastic remarks relative to the Faculty, as a body; and while, by unwearied diligence, he resorts to every honorable means of enriching the science, he should entertain a due respect for his seniors, who have, by their labors, brought it to the elevated condition in which he finds it.

SEC. 2. There is no profession, from the members of which greater purity of character and a higher standard of moral excellence are required, than the medical; and to attain such eminence, is a duty every physician owes alike to his profession and to his patients. It is due to the latter, as without it he can not command their respect and confidence; and to both, because no scientific attainments can compensate for the want of correct moral principles. It is

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also incumbent upon the Faculty to be temperate in all things, for the practice of physic requires the unremitting exercise of a clear and vigorous understanding; and, on emergencies, for which no professional man should be unprepared, a steady hand, an acute eye, and an unclouded head may be essential to the well-being, and even to the life of a fellow creature.

SEC. 3. It is derogatory to the dignity of the profession to resort to public advertisements or private cards or hand-bills, inviting the attention of individuals affected with peculiar diseases—publicly offering advice and medicine to the poor gratis, or promising radical cures; or to publish cases and operations in the daily prints, or suffer such publications to be made; to invite laymen to be present at operations; to boast of cures and remedies; to adduce certificates of skill and success, or to perform any other similar acts. These are the ordinary practices of empirics, and are highly reprehensible in a regular physician,

SEC. 4. Equally derogatory to professional character is it, for a physician to hold a patent for any surgical instrument, or medicine; or to dispense a secret *nostrum*, whether it be the composition or exclusive property of himself or of others; for, if such nostrum be of real efficacy, any concealment regarding it is inconsistent with beneficence and professional liberality; and, if mystery alone give it value and importance, such craft implies either disgraceful ignorance, or fraudulent avarice. It is also reprehensible for physicians to give certificates attesting the efficacy of patent or secret medicines, or in any way to promote the use of them.

ART. II.—*Professional services of Physicians to each other.*

SEC. 1. All practitioners of medicine, their wives, and their children while under parental care, are entitled to the gratuitous services of any one or more of the Faculty residing near them, whose assistance may be desired. A physician afflicted with disease is usually an incompetent judge of his own case; and the natural anxiety and solicitude which he experiences at the sickness of a wife, a child, or any one who, by the ties of consanguinity, is rendered peculiarly dear to him, tend to obscure his judgment, and produce timidity and irresolution in his practice. Under such circumstances, medical men are peculiarly dependent upon each other, and kind offices and professional aid should always be cheerfully and gratuitously afforded. Visits ought not, however, to be obtruded officiously; as such unasked civility may give rise to embarrassment, or interfere with that choice on which confidence depends. But if a distant member of the Faculty, whose circumstances are affluent, request attendance,

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and an honorarium be offered, it should not be declined; for no pecuniary obligation ought to be imposed, which the party receiving it would wish not to incur.

ART. III.—*Of the duties of Physicians as respects vicarious offices.*

SEC. 1. The affairs of life, the pursuit of health, and the various accidents and contingencies to which a medical man is peculiarly exposed, sometimes require him temporarily to withdraw from his duties to his patients, and to request some of his professional brethren to officiate for him. Compliance with this request is an act of courtesy, which should always be performed with the utmost consideration for the interest and character of the family physician, and when exercised for a short period, all the pecuniary obligations for such service should be awarded to him. But if a member of the profession neglect his business in quest of pleasure and amusement, he can not be considered as entitled to the advantages of the frequent and long-continued exercise of this fraternal courtesy, without awarding to the physician who officiates the fees arising from the discharge of his professional duties.

In obstetrical and important surgical cases, which give rise to unusual fatigue, anxiety, and responsibility, it is just that the fees accruing therefrom should be awarded to the physician who officiates,

ART. IV.—*Of the duties of physicians in regard to consultations.*

SEC. 1. A regular medical education furnishes the only presumptive evidence of professional abilities and acquirements, and ought to be the only acknowledged right of an individual to the exercise and honors of his profession. Nevertheless, as in consultations, the good of the patient is the sole object in view, and this is often dependent on personal confidence, no intelligent regular practitioner, who has a license to practice from some Medical Board of known and acknowledged respectability, recognized by this Association, and who is in good moral and professional standing in the place in which he resides, should be fastidiously excluded from followship, or his aid refused in consultation, when it is requested by the patient. But no one can be considered as a regular practitioner or a fit associate in consultation, whose practice is based on an exclusive dogma, to the rejection of the accumulated experience of the profession, and of the aids actually furnished by anatomy, physiology, pathology, and organic chemistry.

SEC. 2. In consultations, no rivalship or jealousy should be indulged; candor, probity, and all due respect should be exercised towards the physician having charge of the case.

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SEC. 3. In consultations, the attending physician should be the first to propose the necessary questions to the sick; after which the consulting physician should have the opportunity to make such further inquiries of the patient as may be necessary to satisfy him of the true character of the case. Both physicians should then retire to a private place for deliberation; and the one first in attendance should communicate the directions agreed upon to the patient or his friends, as well as any opinions which it may be thought proper to express. But no statement or discussion of it should take place before the patient or his friends, except in the presence of all the faculty attending, and by their common consent; and no *opinions* or *prognostications* should be delivered, which are not the result of previous deliberation and concurrence.

SEC. 4. In consultations, the physician in attendance should deliver his opinion first; and when there are several consulting, they should deliver their opinions in the order in which they have been called in. No decision, however, should restrain the attending physician from making such variations in the mode of treatment, as any subsequent unexpected change in the character of the case may demand. But such variation, and the reasons for it, ought to be carefully detailed at the next meeting in consultation. The same privilege belongs also to the consulting physician if he is sent for in an emergency, when the regular attendant is out of the way, and similar explanations must be made by him at the next consultation.

SEC. 5. The utmost punctuality should be observed in the visits of physicians when they are to hold consultation together, and this is generally practicable, for society has been considerate enough to allow the plea of a professional engagement to take precedence of all others, and to be an ample reason for the relinquishment of any present occupation. But, as professional engagements may sometimes interfere, and delay one of the parties, the physician who first arrives should wait for his associate a reasonable period, after which the consultation should be considered as postponed to a new appointment. If it be the attending physician who is present, he will of course see the patient and prescribe; but if it be the consulting one, he should retire, except in case of emergency, or when he has been called from a considerable distance, in which latter case he may examine the patient, and give his opinion in *writing*, and *under seal*, to be delivered to his associate.

SEC. 6. In consultations, theoretical discussions should be avoided, as occasioning perplexity and loss of time. For there may be much diversity of opinion concerning speculative points, with perfect agreement in those modes of practice which are founded, not on hypothesis, but on experience and observation.

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SEC. 7. All discussions in consultation should be held as secret and confidential. Neither by words nor manner should any of the parties to a consultation assert or insinuate, that any part of the treatment pursued did not receive his assent. The responsibility must be equally divided between the medical attendants—they must equally share the credit of success as well as the blame of failure.

SEC. 8. Should an irreconcilable diversity of opinion occur when several physicians are called upon to consult together, the opinion of the majority should be considered as decisive; but if the numbers be equal on each side, then the decision should rest with the attending physician. It may, moreover, sometimes happen, that two physicians cannot agree in their views of the nature of a case, and the treatment to be pursued. This is a circumstance much to be deplored, and should always be avoided, if possible, by mutual concessions, as far as they can be justified by a conscientious regard for the dictates of judgment. But, in the event of its occurrence, a third physician should, if practicable, be called to act as umpire; and, if circumstances prevent the adoption of this course, it must be left to the patient to select the physician in whom he is most willing to confide. But, as every physician relies upon the rectitude of his judgment, he should, when left in the minority, politely and consistently retire from any farther deliberation in the consultation, or participation in the management of the case.

SEC. 9. As circumstances sometimes occur to render a *special consultation* desirable, when the continued attendance of two physicians might be objectionable to the patient, the member of the faculty whose assistance is required in such cases, should sedulously guard against all future unsolicited attendance. As such consultations require an extraordinary portion both of time and attention, at least a double honorarium may be reasonably expected.

SEC. 10. A physician who is called upon to consult, should observe the most honorable and scrupulous regard for the character and standing of the practitioner in attendance; the practice of the latter, if necessary, should be justified as far as it can be, consistently with a conscientious regard for truth, and no hint or insinuation should be thrown out which could impair the confidence reposed in him, or affect his reputation. The consulting physician should also carefully refrain from any of those extraordinary attentions or assiduities, which are too often practiced by the dishonest for the base purpose of gaining applause, or ingratiating themselves into the favor of families and individuals.

ART. V.—*Duties of physicians in cases of interference.*

SECTION 1. Medicine is a liberal profession, and those admitted into its ranks

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should found their expectations of practice upon the extent of their qualifications, not on intrigue or artifice.

SEC. 2. A physician in his intercourse with a patient under the care of another practitioner, should observe the strictest caution and reserve. No meddling inquiries should be made—no disingenuous hints given relative to the nature and treatment of his disorder; nor any course of conduct pursued that may directly or indirectly tend to diminish the trust reposed in the physician employed.

SEC. 3. The same circumspection and reserve should be observed when, from motives of business or friendship, a physician is prompted to visit an individual who is under the direction of another practitioner. Indeed, such visits should be avoided, except under peculiar circumstances; and when they are made, no particular inquiries should be instituted relative to the nature of the disease, or the remedies employed, but the topics of conversation should be as foreign to the case as circumstances will admit.

SEC. 4. A physician ought not to take charge of or prescribe for a patient who has recently been under the care of another member of the faculty in the same illness, except in cases of sudden emergency, or in consultation with the physician previously in attendance, or when the latter has relinquished the case, or been regularly notified that his services are no longer desired. Under such circumstances, no unjust and illiberal insinuations should be thrown out in relation to the conduct or practice previously pursued, which should be justified as far as candor and regard for truth and probity will permit; for it often happens that patients become dissatisfied when they do not experience immediate relief, and, as many diseases are naturally protracted, the want of success, in the first stage of treatment, affords no evidence of a lack of professional knowledge and skill.

SEC. 5. When a physician is called to an urgent case, because the family attendant is not at hand, he ought, unless his assistance in consultation be desired, to resign the care of the patient to the latter immediately on his arrival.

SEC. 6. It often happens, in cases of sudden illness, or of recent accidents and injuries, owing to the alarm and anxiety of friends, that a number of physicians are simultaneously sent for. Under these circumstances, courtesy should assign the patient to the first who arrives, who should select from those present any additional assistance that he may deem necessary. In all such cases, however, the practitioner, who officiates should request the family physician, if there be one, to be called, and, unless his farther attendance be requested, should resign the case to the latter on his arrival.

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SEC. 7. When a physician is called to the *patient of another practitioner*, in consequence of the sickness or absence of the latter, he ought, on the return or recovery of the regular attendant, and with the consent of the patient, to surrender the case.

[The expression, "*patient of another practitioner*," is understood to mean a patient who may have been under the charge of another practitioner at the time of the attack of sickness, or departure from home of the latter, or who may have called for his attendance during his absence or sickness, or in any other manner given it to be understood that he regarded the said physician as his regular medical attendant.]

SEC. 8. A physician, when visiting a sick person in the country, may be desired to see a neighboring patient who is under the regular direction of another physician, in consequence of some sudden change or aggravation of symptoms. The conduct to be pursued on such an occasion is to give advice adapted to present circumstances; to interfere no farther than is absolutely necessary with the general plan of treatment; to assume no future direction, unless it be expressly desired; and, in this last case, to request an immediate consultation with the practitioner previously employed.

SEC. 9. A wealthy physician should not give advice *gratis* to the affluent; because his doing so is an injury to his professional brethren. The office of a physician can never be supported as an exclusively beneficent one; and it is defrauding, in some degree, the common funds for its support, when fees are dispensed which might justly be claimed.

SEC. 10. When a physician who has been engaged to attend a case of midwifery is absent, and another is sent for, if delivery is accomplished during the attendance of the latter, he is entitled to the fee, but should resign the patient to the practitioner first engaged.

ART. VI.—*Of differences between physicians.*

SECTION 1. Diversity of opinion and opposition of interest, may, in the medical as in other professions, sometimes occasion controversy and even contention. Whenever such cases unfortunately occur, and cannot be immediately terminated, they should be referred to the arbitration of a sufficient number of physicians, or a *court-medical*.

SEC. 2. As a peculiar reserve must be maintained by physicians towards the public, in regard to professional matters, and as there exist numerous points in medical ethics and etiquette through which the feelings of medical men may be painfully assailed in their intercourse with each other, and which cannot be understood or appreciated by general society, neither the subject-matter

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of such differences nor the adjudication of the arbitrators should be made public, as publicity in a case of this nature may be personally injurious to the individuals concerned, and can hardly fail to bring discredit on the faculty.

ART. VII.—*Of pecuniary acknowledgments.*

Some general rules should be adopted by the faculty, in every town or district, relative to *pecuniary acknowledgments* from their patients; and it should be deemed a point of honor to adhere to these rules with as much uniformity as varying circumstances will admit.

OF THE DUTIES OF THE PROFESSION TO THE PUBLIC, AND OF THE OBLIGATIONS OF THE PUBLIC TO THE PROFESSION.

ART. I.—*Duties of the profession to the public.*

SEC. 1. As good citizens, it is the duty of physicians to be ever vigilant for the welfare of the community, and to bear their part in sustaining its institutions and burdens; they should also be ever ready to give counsel to the public in relation to matters especially appertaining to their profession, as on subjects of medical police, public hygiene, and legal medicine. It is their province to enlighten the public in regard to quarantine regulations—the location, arrangement, and dietaries of hospitals, asylums, schools, prisons, and similar institutions—in relation to the medical police of towns, as drainage, ventilation, &c.—and in regard to measures for the prevention of epidemic and contagious diseases; and when pestilence prevails, it is their duty to face the danger, and to continue their labors for the alleviation of the suffering, even at the jeopardy of their own lives.

SEC. 2. Medical men should also be always ready, when called on by the legally constituted authorities, to enlighten coroners' inquests, and courts of justice, on subjects strictly medical—such as involve questions relating to sanity, legitimacy, murder by poisons or other violent means, and in regard to the various other subjects embraced in the science of Medical Jurisprudence. But in these cases, and especially where they are required to make a *post-mortem* examination, it is just, in consequence of the time, labor, and skill required, and the responsibility and risk they incur, that the public should award them a proper honorarium.

SEC. 3. There is no profession, by the members of which eleemosynary services are more liberally dispensed than the medical, but justice requires that some limits should be placed to the performance of such good offices. Poverty, professional brotherhood, and certain of the public duties referred to in the

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first section of this article, should always be recognized as presenting valid claims for gratuitous services; but neither institutions endowed by the public or by rich individuals, societies for mutual benefit, for the insurance of lives or for analogous purposes, nor any profession or occupation, can be admitted to possess such privilege. Nor can it be justly expected of physicians to furnish certificates of inability to serve on juries, to perform *military* duty, or to testify to the state of health of persons wishing to insure their lives, obtain pensions, or the like, without a pecuniary acknowledgment. But to individuals in indigent circumstances, such professional services should always be cheerfully and freely accorded.

SEC. 4. It is the duty of physicians, who are frequent witnesses of the enormities committed by quackery, and the injury to health and even destruction of life caused by the use of quack medicines, to enlighten the public on these subjects, to expose the injuries sustained by the unwary from the devices and pretensions of artful empirics and impostors. Physicians ought to use all the influence which they may possess, as Professors in Colleges of Pharmacy, and by exercising their option in regard to the shops to which their prescriptions shall be sent, to discourage druggists and apothecaries from vending quack or secret medicines, or from being in any way engaged in their manufacture and sale.

ART. II.—*Obligations of the public to physicians.*

SECTION 1. The benefits accruing to the public, directly and indirectly, from the active and unwearied beneficence of the profession, are so numerous and important, that physicians are justly entitled to the utmost consideration and respect from the community. The public ought likewise to entertain a just appreciation of medical qualifications; to make a proper discrimination between true science and the assumptions of ignorance and empiricism—to afford every encouragement and facility for the acquisition of medical education —and no longer to allow the statute-books to exhibit the anomaly of exacting knowledge from physicians, under a liability to heavy penalties, and of making them obnoxious to punishment for resorting to the only means of obtaining it.

Resolved, That this Association recognize Specialties as proper and legitimate fields of practice.

Resolved, That Specialists shall be governed by the same rules of professional etiquette as have been laid down for general practitioners.

Resolved, That it shall not be proper for Specialists publicly to advertise themselves as such, or to assume any title not specially granted by a regularly chartered College. (See Transactions of Am. Medl. Ass., Vol. xx.)

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This then, gentlemen, is the law of your duty—the golden rule by which your professional life must be squared. The code which prescribes your responsibility to your patient, to your profession, to the public, and to yourself; the science of medical philosophy which teaches the medical man his duty and the reasons for it. It should be morally binding on you because in every respect it is made to conform to right and reason.

The lesson inculcated by the golden rule of the Bible—"Do unto others as you would have them do unto you," is repeated here. The high moral tone of this code, the expression of truth and justice in every sentence of it, cannot but tend to promote the sentiment of professional honor and elevate the standard of professional excellence in the mind of every one who understands and appreciates it.

In Chapter 1, the duties of the physician to those who place their trust and confidence in him, are simply but emphatically expressed, and it especially inculcates that whilst it is his duty to be ever ready to obey the calls of the sick, "his mind should be imbued with the greatness of his mission, and the responsibility he habitually incurs in its discharge." Whilst it dictates a due regard to the dignity and a full appreciation of the great responsibility of those practicing the profession, it urges the necessity of being influenced by the delicate instincts and nicer courtesies which are always the spontaneous promptings of the refined and cultivated gentleman. Whilst it breathes the spirit of gentleness and kindness, and proclaims the peculiar genius of the medical profession to be humane philanthropy, it urges that their tenderness should be so mingled with firmness and authority as to inspire esteem and gratitude, and command confidence and respect. Article II, Chapter 1, tells you of the obligations of patients to their physician.

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Ah! if this Chapter were better understood by the public, how much would the anxieties of the profession be relieved! How greatly would their exacting labors be lightened! How much more surely would the patient's safety and comfort be secured! It is no unreasonable demand that the profession makes. It is but the grateful and discriminating return for the many sacrifices of comfort, of ease, and of health, that he is called upon continually to make for their welfare that he exacts. Their duties towards him should seem to those who entertain a just sense of his services, to be but the natural responses that should arise from hearts imbued with a grateful sense of kindness and justice. Gentlemen of the profession, it is here where you will meet your severest trials. Apart from all the anxiety that you must feel for the sick man entrusted to your care, you will find there are those in the sick room among even those who are reputed to be well informed, as well as among the ignorant, who seem to think that they are perfectly competent to decide whether a physician is treating a case properly or not, and hesitate not to express their opinions on this point in the most positive manner. They ignore entirely the close observation, and the extensive knowledge, and the long servitude at the bedside that the physician brings to his aid, and in striking contrast with their meagre observation, and their ignorance of a single principle in pathology or therapeutics, they play the critic and put forth their opinion with all the authority of an oracle. There are those, too, who dare go even farther than this and in this matter of life and death, losing sight of the terrible responsibility they assume, and setting aside the directions of the physician, they presume to interrupt his whole plan of treatment, condemn the remedies upon which he may have based the theory of his method of cure, and substitute

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some nostrum of their own upon the plea that their experience had tested its infallibility. It is hard to counsel forbearance and patience in such unpardonable interferences. It is hard to overlook the fact that the life of your patient is thus put in jeopardy—that valuable time is thus irretrievably lost—that important means are thus set aside, and that your own reputation is made the plaything of by this thoughtless and unwarrantable assumption of your peculiar prerogative. Now, in such cases, whilst I would refer you to the example of that great Physician who, the bible tells us, "went about doing good and healing all manner of diseases," and who, when his persecutors heaped upon him contumelies and inflicted sufferings beyond the power of human nature to endure, turned his agonized look to the throne of his Heavenly Father and breathed out the supplication, "Father forgive them for they know not what they do."

I say, whilst I would refer you to this example of Christian forgiveness, I would point you at the same time to the spirit and teachings of your Code of Ethics, which says: "The obedience of a patient to the prescriptions of his physician should be prompt and implicit; he should never permit his own crude opinions as to their fitness to influence his attention to them. * * * Patients should never allow themselves to be persuaded to take any medicine whatever that may be recommended to them by the self-constituted doctors and doctoresses who are so frequently met with, and who pretend to possess infallible remedies for the cure of every disease."

I tell you, in the sick room where yours is the responsibility—where the odium of failure or the triumph of success is yours—be king—be sole dictator or be nothing—share no divided responsibility with the ignorant.

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Prepare by laborious study and close observation for your duties, and then in the confidence that knowledge gives you, with that firmness which commands respect, yet with that condescension which disarms the charge of arrogance, assume the position that your superior knowledge assigns you, take the burden on your own shoulders, nor seek to share it with any but those who bring their title to equality from their Alma Mater. Your own reputation exacts this of you. The claims of your profession will be satisfied with nothing less—the true interests of humanity is else misplaced in your keeping.

The key to the first Article of the second Chapter of the Code is found in the words; "Every individual on entering the profession as he becomes thereby entitled to all its privileges and immunities, incurs an obligation to exert his best abilities to maintain its dignity and honor; to exalt its standing, and to extend the bounds of its usefulness. He should therefore observe strictly such laws as are instituted for the government of its members, and whilst, by unwearied diligence, he resorts to every honorable means of enriching the Science, he should entertain due respect for his seniors, who have, by their labors, brought it to the elevated condition in which he finds it."

As professional men we acknowledge these obligations and the reasons therefor; but these obligations carry us still further than in our relations with the members of the profession. As philanthropists and humanitarians we must recognize, besides these, *other* obligations, namely: the duties we owe the cause of science and humanity.

The dignity and importance of the profession of medicine, in a public point of view, can scarcely be over-estimated, and the demands of the profession and the world upon the indi-

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vidual members of the profession are proportionally large.

These are obligations you cannot escape from, duties that you cannot avoid. How then shall you best meet these obligations; how best perform these duties? First. By being *men*, whose lives and character shall show to the world that you are worthy of the honors that you bear; and secondly, by being *physicians*, whose professional learning and skill and devotion to your science, shall qualify you for all the important public and private duties that appertain to your profession.

Without a faithful and hearty performance of these duties there can be no real honor or dignity in the profession; there can be no true and genuine reciprocity of kindly sentiment—no binding together in the bonds of a united brotherhood; no union of purpose; no common effort in the promotion of the best interests of the profession, and of humanity.

On the contrary, by a strict adherence to the rules of this Chapter of the Code, by a keen sense of what is honorably right, and a faithful adherence to what is based on the strictest integrity and honor, you will at once assert your title to the esteem, respect and confidence of your professional brother, and you will find, sooner or later, that the public will endorse the estimate of a man, entertained by his associates. The truth will come home to you in your career, that the good opinion and confidence of the members of your own profession, like the King's name on the field of battle, is a "tower of strength." It is the title to legitimacy. The ambition to please the people may mislead a young man, but the ambition to obtain the confidence and esteem of the profession can never mislead him, for it can only be secured by real deserving, based on actual learning, united with the strictest integrity and honor.

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A man's mental and moral being must, to a greater or less extent, be in unison with his daily vocation. His studies and his practices must, to some extent at least, give direction to and modify his mental growth and culture, and impress his moral attributes. The study and practice of medicine as a humane science should have a tendency, then, to refine the feelings and to develop and strengthen the best impulses of the heart. It has been said that "an *undevout* astronomer is mad." Equally as mad, then, should be an undevout anatomist; for the wonders of the human body are as great as the wonders of the heavens. There is "but one temple in the world," says Novalis, "and that is the body of man. Nothing is holier than his high form. Bending before men is a reverence done to this revelation in the flesh. We touch heaven when we lay our hand on a human body."

Speaking of this temple not builded with hands, the incomparable Watson says: "You cannot have looked into the mechanism of that intricate but perfect work—you cannot have contemplated its fullness of exquisite contrivance—its endless examples of means adapted to ends—its prospective expedients against future needs—its compensations for inevitable disadvantages—its direct provisions for happiness and enjoyment without receiving the profoundest conviction of the being and attributes of its Maker."

It is upon human anatomy that the profound philosopher Paley, in his unrivalled argument for natural theology, "takes his stand." And sixteen centuries before him, Galen had felt that in writing his anatomical treatises he was composing a hymn to the Deity; that an exposition so indicative of the wisdom, the power and the goodness of God, was an act of piety and praise. In the practice, too, of our profession, we have to deal not only with these wonders of study, but also

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with the visitations of Providence in the forms of disease—the fearful problems of life and death are presented to us at every step of our course. Upon our diligence, caution, promptness, soundness of judgment often hang the issues of life and death. We tread among open graves, while supplicants around us extend their trembling hands to us as the priesthood of God's healing art. The fate and comfort of the sick and dying is in our hands—the dearest interests of the living are committed to our keeping. What wonder is it, then, that medical ethics demands that no man whose honor is not fire-proof, should wear the badge or hold the diploma of the medical profession? What wonder that the united voice of the worthy members of the profession should say:

> "Let knowledge grow from more to more,
> But more of reverence in us dwell;
> That mind and soul, according well,
> May make one music as before,
> But vaster. * * * * *"

Nor is it to be wondered at that the profession claims that the tendency of its practice is, to give birth to kindly sentiments and ennobling feelings, to develop and strengthen the nicer sentiments of honor and gentlemanly courtesy, where the germ of such feelings have an abiding place, for it is upon this assumption that the ethical rules governing all the delicate relations into which physicians are continually placed in their intercourse with each other are based; in the discharge of professional services to each other; in the discharge of the vicarious offices which in courtesy they are often called upon to fill; in the many instances of interferences or accidental entanglements with other physician's patients; in consultations, or in those instances where there are differences between physicians; in the matter of fees, and pecuniary ac-

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knowledgments; in all those instances where a professional brother's reputation is in your hands, medical ethics prescribes full and explicit rules for your government. But it all at last resolves itself into that golden rule given us by the great moral code of ethics, the Bible, "Do unto others as you would that they should do unto you."

And now let us consider very briefly the last chapter of the Code, or that which relates to "*the duties of the profession to the public, and the obligations of the public to the profession.*" It is in the discharge of these duties that our profession lays its claims to be considered a useful, charitable and humane profession; a science having great and beneficent objects in view; its professors as a priesthood, set apart and annointed for a peculiar and sacred function, to which belongs in a considerable degree the issues of happiness and misery—of life and death to individuals—and in which unfaithfulness, either in promise or performance, is an offence not against his fellow-man only, but the Most High. It claims, too, that no branch of science deals so intimately with the safety, the prosperity and the material interests of communities. It claims, too, that to the disciples of this science belongs the high privilege of approaching the judgment seat of public opinion, as ambassadors clothed with authority, carrying in their hands the great seal of science, in their heads the best learning of the age, in their hearts that intense humanity which overflows with the kindliest sympathies for the human race.

How are these claims vindicated? How does medical science and its professors place the world under such obligations in obedience to the requirements of professional ethics? The true disciples of this science are ever watching, and are ever giving warning of the many evils that are continually

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threatening to snatch away from heedless humanity the jewels of health and life; in guarding continually the innumerable outlets through which the stream of life may be drawn; in devoting their time, their talent, and their lives to the best and most sacred interests of humanity, they feel that they hold a divine commission for the performance of a great and responsible duty; they feel that the warrant for this conviction is strengthened by the remembrance of the fact that the only secular employment on which the "son of man" adventurned during his stay on earth was—healing the sick as though the extent of his power and the divinity of his mission could in no other way be so strongly attested.

Fortitude in times of danger, and faithfulness at the post of duty, in obedience to that requisition of the Code which says: "When pestilence prevails, it is their duty to face the danger, even at the jeopardy of their own lives," is a point of honor with the true soldier of our profession, and vindicates their claim to public confidence. Who that watches the faithful physician in the performance of his duties in the plague-stricken city can doubt the validity of this claim, forgetful of his own danger, discarding all the precautions himself that he so earnestly imposes on others; wearied and worn, he urges on his overtasked nature that he may stand by the bedside of the suffering to relieve and save. The ringing alarm from his night bell calls him from his unfinished slumber and rest, and in the silent hours of the night, when no sound but the echo of his own footfall is heard upon the dark and deserted streets, he wends his way to the chamber where the shadows of death make the atmosphere seem heavy and dark. No cheers from a crowd stimulate his courage, no excitement and wild tumult of joy urge him to desperate deeds, no flourish of trumpets, or soul-stirring music fires his enthusiasm.

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But silently, quietly, with a full consciousness that the deadly elements of disease fill the very atmosphere, he sits by the bedside, anxious alone in behalf of the sufferer who, he feels, if he can be saved at all must be saved by his strength and his skill. Dr. Alonzo Clark once said: "I have seen the soldier of twenty battles turn pale and flee before the least of the physician's perils." As a body how have the profession vindicated their claims to being considered the disciples of a progressive and humane science, and thus discharged their duties to the public? Besides the many valuable additions that it has made, and is continually making, to the stores of therapeutic remedies, the science of medicine has proclaimed the fact that the "people's health is the people's safety;" that the intellectual and moral integrity of communities feel the force of degenerating influences according as the physical organization improves or deteriorates. They have forced this conviction on governments, and hence the growing importance attached to bureaus of census and registration. It has demonstrated the fact to political economists that ill-health and unsound constitutions beget inability to labor, and hence destitution, temptation, crimes against the moral law and against the State. The science of medicine has worked faithfully and with much success to correct all this, thus proving that its professors are the true guardians of the State's highest and most important interests. Sanitary science and vital statistics are not only increasing the comfort of living but are adding and have added to the average of human life. The profession of medicine are busy in their efforts to prevent all unnecessary destruction of life, to save to the State and the individual the time, the money and the suffering which are the penalties of negligent or ignorant violation of the laws of health. In the sanitary reform of

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cities, and in the protection of communities from infectious and contagious diseases; in framing laws in reference to quarantine; in all matters relating to medical police and public hygiene, the scientific physician's opinion is sought, and his suggestions are considered as authoritative, and thus not only individually and in isolated cases, but by organized effort and liberal expenditure of time, labor and money, he counsels the adoption of measures, and aids, by his best effort, to make effective the very means by which his income is diminished. But he does not hesitate, for by tradition, by education, by the obligations of his diploma, by the spirit and letter of his Code of Ethics, by the liberal nature of his profession, by common humanity, he is bound to and does, by precept, and example by teaching, by free lectures, by publications, by concert of action in Boards of Health, Sanitary Committees, Bureaus of Hygiene, and through many other agencies, work vigorously, earnestly, and somewhat successfully to destroy that demand for his services, through which only he can claim any pecuniary return. This he does, to vindicate the claim of his science to be considered a humane one, and because the true professional spirit is satisfied with nothing less. In the great charities of the world—the hospital for the suffering poor—the asylum for the unprotected orphans—the votaries of this science give their time and skill without fee or reward. In the cottage of the poor, and the hovel of the destitute they lean over the victims of suffering and disease, and exert their best skill and learning to save, that their science may vindicate its claim to be considered charitable, and discharge its full duty to the public. In the temple of justice, where truth should be ever sought, it is the knife, the microscope, and the crucible of the scientific physician that confronts crime and puts the seal of condemnation on the criminal.

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The last great duty imposed on the profession by this chapter of the Code of Ethics, is in reference to quacks and quackery. What should be the attitude of the regular medical profession towards irregular practitioners? The Ethics of the profession teaches us to entirely ignore such persons as medical men. It is best that it should be so—best for the profession, and best for the interests of humanity. "No one can be considered as a regular practitioner or a fit associate in consultation whose practice is based on an exclusive dogma, to the rejection of the accumulated experience of the profession, and the aids actually furnished by anatomy, physiology, pathology and organic chemistry." Is this doctrine of Ethics right, and to be followed under all circumstances? I answer most emphatically, yes.

It may be claimed that, concerning medical matters, there is great room for honest difference of opinion. So there is—and the regular physician, more than any other, is the one who recognizes the fact. He is not shut up to any one-idea system. The whole world of nature and science is his field of study. Rational medicine is something more of an eleticism, than a mere name. Within the bounds of common sense and reason there *is* a chance for honest difference of opinion in most of the important minutiæ of medical matters, and rational medicine admits the fact; and with an intelligent appreciation of the vastness and complexity of nature's mechanism and laws, and of the frailty of human wisdom, sees the folly of any claim to perfection. But this same catholicity of spirit, which is the offspring of knowledge, destroys all sympathy with every system of empiricism, whether the result of ignorance or design. It knows that the chance for an honest difference of opinion has a limit in medicine, as in other things; that it is limited by reason and demonstrated

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science. A man who holds to a belief in a theory which can not stand such a test, and honestly practices upon it, can have but little perception of what his remedies are doing, or what nature, unaided, is doing, in effecting the results which he observes. Such a man may not be altogether responsible for his mental condition; or, as Dr. Hooker says, a belief in such a system, "after a full examination of its character and evidences, implies an obliquity of mind which incapacitates for a just appreciation of truth."

But the man who, knowing the whole theory to be a visionary speculation, and who, nevertheless, hangs out the name of eclectic or homeopathist, or otherwise, in his unprincipled way of ministering to a popular delusion, deserves not even our sympathy.

"The truth is, that in the wide realms of the ages a great *dual* law has given form, beauty and order to all created things, and as the physical world and its phenomena are controlled by a dual law—attraction and repulsion—just so is the moral world and its phenomena governed and controlled by a great dual law—good and evil—and the one is as much the work of God as the other; they both spring from wisdom's eternal source—for the Scriptures declare, 'I form light and create darkness; I make peace and create evil; I, the Lord, do all these things.' Individual man is governed by a like law—as the poet well expresses it, when he says—

> "Two principles in human nature reign—
> Self-love to urge, and reason to restrain."

And the history of medicine proves that our science has been no exception to the general rule; and this dual law, good and evil, should with us be defined Medical Science and Medical Quackery. They are coeval one with the other, and for some three thousand years they have marched down the lane of

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time to the present; the one ever improving towards the perfection of its principles—the other ever varying in its evil, and dying but to give place to its fellow in some equally untenable shape."

We are commanded in the good book to hate evil; therefore we should have no love for medical quackery. Our ethics teaches us to have no fellowship with it; therefore denounce it in all its varying forms.

Where are all the systems of quackery that have sprung into existence and hurled their darts of enmity against the foundation of true medical science? All are dead, and are nearly lost in unremembered nothingness, but one, and that will as surely follow the fate of the others as that Heaven rules; because its foundation is as rotten and groundless as its principles and doctrines are false and ridiculous. I mean Homeopathy. Each other system has sprung into life spontaneously, has had its short day and expired in the darkness of death—

> "Like morning insects, which in the muck begun,
> They fly, they buzz, and die by the setting sun."

Proud that our system of medicine is based upon a foundation that has defied all the shocks and calumnies of hosts of quackeries that have met their fate in the encounter, we should feel that our sense of honor, as well as the duty we owe the profession and the world, requires us to ignore them altogether, except as in obedience to the principles of the great dual law in the medical world, that they must exist to keep the moral scales evenly balanced; so that the great value of medical science may be appreciated when compared with its worthless opposite.

And how do the public too often requite our science for the benefits accruing to them, directly and indirectly, from the

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active and unwearied beneficence of the profession? Except in point of general respectability, a large portion of the community regard the scientific practitioner and the illiterate quack as upon nearly the same level—having in view the same object, and only differing somewhat as to the means by which that object is to be accomplished. There is no subject which by the mass of mankind, is so rarely made a matter of general study and investigation, even in its elements, as medical science; while, at the same time, there is no subject regarding which men so universally consider themselves adequately informed, in all its practical application, as this same medical science. Men follow the dictates of common sense in regard to every other interest. They judge well mechanics; they judge accurately in regard to commercial interests, and oftentimes show ability in the discussion even of metaphysics; but of medical men and medical science they are mainly ignorant. Men learned in all things else are fools in medicine. Hence, we find men eminent as jurists, merchants, politicians, and divines, too often give practice and encouragement to some pretender, a representative of some medical humbug or swindle. They can not see that *common sense* and the *intelligent application* of means to an end, is what is required in medicine, as in other things. They adopt Homeopathy, as Oliver Wendell Holmes says—"that parody of mediæval theology, which finds its dogma of hereditary depravity in the doctrine of *psora*, or itch; its miracles of transubstantiation in the mystery of its triturations and dilutions; its Church in the people who have mistaken their century; and its priests in those who have mistaken their calling." "With all its glaring absurdities and ridiculous theories—theories which, if true, would subvert all known natural laws; which declare all philosophers previous

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to Haneman idiots; affirm that effect is not equal to cause; advancing laws and rules in medicine which, if applied to ordinary business transactions would soon elect us to prominent places in the county poor house; if to regulations in diet, would soon place us on exhibition as notable cases of dead or living skeletons; and if to matters of theology or Christianity, would make us the most Godless and soulless of all our maker's creatures."

Gentlemen of the medical profession—prepare to do honor to the true science of medicine. Learn well its law and principles, obey the mandates of its ethics, and wage eternal warfare on all systems of quackery that seek to undermine its secure foundations. What, though quackery and empiricism flourish for the hour! Why heed the puny efforts of Homeopathy and its kindred delusions to divert the stream of science from its accustomed channels? They are but dreams and shadows—visions springing from human credulity and human curiosity. Where are their temples and their monuments? Where their literature—their contributions to science? Where their commissions—where the demands made upon them to elucidate the high problems of life and and its dependencies—where their multiplied claims upon humanity? No answer comes back through the ages of the past—no voice of the present responds. Whilst true science rears its column high above the crawling things that creep about its base, the names carved in its monumental granite stand out as sharply as ever across the centuries, defying all the puny efforts of sciolists, of isms, and pathies, and self-styled reformers, to deface them. Their mad flights against the imposing column of true medicine but insures their complete destruction, as—

"The feeble sea-birds, blinded in the storms,
On some tall light-house dash their little forms,

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And the rude granite scatters for their pains,
Those small deposits that were meant for brains;
Yet the proud fabric in the morning's sun
Stands all unconscious of the mischief done;
Still the red beacon pours its evening rays
For the lost pilot, with as full a blaze—
Nay, shines, all radiance, o'er the scattered fleet
Of gulls and boobies brainless at its feet.

'I tell their fate, though courtesy disclaims
To call our kind by such ungentle names;
Yet, if your rashness bid you vainly dare,
Think of their doom, ye simple, and beware!

"See, where aloft its hoary forehead rears
The towering pride of twice a thousand years!
Far, far below the vast incumbent pile
Sleeps the gray rock from Art's Ægian isle;
Its massive courses, circling as they rise,
Swell from the waves to mingle with the skies!
There every quarry lends its marble spoil,
And clustering ages blend their common toil;
The Greek, the Roman, reared its ancient walls,
The silent Arab arched its mystic halls.

"In that fair niche, by countless billows laved,
Trace the deep lines that Sydenham engraved:
On yon broad front that breasts the changing swell,
Mark where the ponderous sledge of Hunter fell;
By that square buttress look, where Velpeau stands,
The stone yet warm from his uplifted hands."
There where the *Western* sun pours down its rays,
And gilds the efforts of more recent days,
Mark that proud column, without flaw or spot,
That Rush has hewn, and Sims and our own Nott,
And say, oh Science! shall thy life-blood freeze
When fluttering folly flaps on walls like these?
No—they will stand through all revolving time,
Firm, imperishable, and sublime!

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TUBERCULOSIS AND SCROFULOSIS.

BY E. P. GAINES, M. D., OF MOBILE.

Are Tuberculosis and Scrofulosis convertible terms, or do they imply different conditions of the system? On referring to the literature of the subject, we find that most of the leading authorities decide this question in the affirmative. [See Watson, vol. 2, page 195; Wood, vol. 1, p. 120; see Savoy, Holmes' Surgery, Art. Scrofu., p. 357.] Wood says: "They (that is, tuberculosis and scrofulosis,) are considered as one affection." As Aitken's definition is very thorough, and as I wish to make it a text from which to frame my argument, I will quote it in full:

SCROFULA—*Definition.*—"A particular morbid condition of the system, attended in active or acute forms of the disease by a persistent increase of temperature, followed by a continuous wasting of the body and the growth of a substance in various tissues and regions, to which the name 'tubercle' or 'tuberculous matter' has been applied, or without the deposit of tubercles. These febrile phenomena are associated or preceded with peculiarities of outward appearance during life, and liability to certain diseases, termed 'scrofulous,' such as swelling of the lymphatic glands, and of joints, carious ulceration of bones, frequent and chronic ulcers of the cornea, ophthalmia, abcesses, and cutaneous pustular eruptions, persistent swelling and catarrh of the mucous membrane of the nose, and characteristic thickening and swelling of the upper lip—lesions, which, while they are distinguished by mildness of symptoms, are peculiarly persistent, characterized by specific forms of inflammation or ulceration, and follow on the

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application of exciting causes which would have no effect on a healthy person."

No one can read this definition carefully, thoughtfully, without seeing the great difference in the two conditions mentioned, nor would I want a better definition of tuberculosis than the first part, or of scrofulosis than the second and concluding part. Let us take these two conditions separately, and analyze them.

What is Scrofulosis? If this question were propounded in reference to Tuberculosis, we could answer it very readily. Tuberculosis, or the tuberculous diathesis, the tendency in the system to form a certain anatomical product styled a tubercle. Can we give so definite an explanation of Scrofulosis? If a child is brought to us with enlarged glands we call it "scrofulous." This hyperplasia of the glands is sometimes primary, oftener secondary, to inflammation propagated along their lymphatic vessels—for example, from a cutaneous eruption—but this same irritation may produce like symptoms in a healthy child, and we only come to this conclusion if this state of things should persist. This stubbornness and chronicity is shown in all inflammations, and as observation proved that it occurred in a certain type, or rather in persons having certain characteristics, was called scrofula, not so much as being a disease in itself, as giving character to disease.

Now, authors will take this diseased gland, or glands, and endeavor to show that the softening, suppuration, &c., is the type of what is going on in the lung when affected with tubercles. Dr. Dickson says, in his article on Scrofulosis and Tuberculosis, "that Dr. Flint in his work speaks of the cervical gland as showing you the changes which go on in tubercle," but, says Dickson, there is no tuberculous deposit in a cervical gland. Lloyd tells you very well the changes that occur: There is hyperœmia of the gland; it is always an inflamed gland. Prof. Flint himself says tubercle is often deposited independently of inflammation. Now, no cervical gland ever enlarges without inflammation; it becomes sore, it becomes red, and by and by it suppurates. [Studies in Pathology and Therepeutics, by Dr. Dickson, p. 149.

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In a paper read before the Medical Society of the County of New York, by Dr. J. Lewis Smith, he says:

The relation of Scrofula to Tuberculosis has attracted much attention, some holding strongly to their identity, others as strongly denying it. We must admit (he goes on to say) that the cells which we find so multiplied in scrofulus hyperplasia of the lymphatic glands, are the same in character as the cells of the tubercle; in other words, the physiological type of the tubercle cell is the lymph cell. But in Scrofula these cells are found *only* in the glands, while in Tuberculosis they appear not only in these, but in various tissues throughout the system. However, in the gland itself their mode of production is different in the two cases. In strumous hyperplasia the lymph cells are multiplied by segmentation of the cells physiologically belonging to the glands; in tubercle they are produced from nuclei in the connective tissue of the gland.

"Scrofula simply *modifies* ordinary physiological or pathological processes. In tuberculosis there occurs in the affected tissue a pathological process quite peculiar; there is produced in the connective tissue a cell which never otherwise occurs there."—[N. Y. Medical Journal, April, 1871, pp. 459, 460.

"Flint himself tells you (says Dickson, in the article above referred to,) that tubercular consumption is not of more frequent occurrence in those marked by the inflammation of the cervical glands, who have suffered from scrofula in their youth, than in those who have not suffered in this way. This cervical inflammation is one of the clearest marks of scrofulous tendency, diathesis, constitution; and yet he tells you that tubercular consumption does not occur more frequently in them than in others. Nay, you find those who believe it occurs less in subjects who have suffered from inflammation of the cervical glands. I am of this opinion. The late Dr. Parrish, of this city, hailed the appearance of swelling of the glands as one of the means of added security in such subjects from tuburcular consumption—given the disposition, it had better take this mode of manifestation than the internal. I have lived long enough, and have had generations enough of

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patients under my care, to be satisfied that Dr. Parrish was right. Those who have suffered from inflammation of the cervical glands in youth are rather less liable than those who have not. *Cœteris paribus.*

"I am certain that the ordinary marks of inflammation about the neck, as left in the well known cicatrices, are far less now than when I began the practice of my profession. I don't speak of light degrees of the disease. I have in my note-books records of many cases, and in my memory a long list of cases of inflammation of the cervical glands of great intensity, great swelling eventuating in suppuration, and which I had to open frequently. How few of you are thus marked? The same number of individuals could not have been collected forty years ago without a considerable portion with manifestations clearly enough of having had such inflammations. Now, while these cases have been diminishing in frequency, tubercular consumption has increased in frequency; and the records I have examined show that with us at least in this country it is a disease of progressive mortality."—[See Dickson, p. 150.

Dr. West takes the same view of this subject as I do, in his work on Diseases of Children. (West on Diseases of Children, p. 583.) He says:

"Concerning Scrofula I have little to say, for its more important manifestations are of a kind which custom and convenience have assigned to the care of the surgeon rather than that of the physician. Closely allied in its essential nature to tuberculosis; like it, hereditary; like it, induced by scanty food, defective ventilation, and an unhealthy dwelling, and proving fatal in many cases by becoming associated with phthisis or with hydrocephalus, there yet are differences between tuberculosis and scrofula, at least as marked as those which separate diptheria from scarlatina, and the tendency of pathological research appears to be to render these differences more and more obvious. Scrofula is much more limited than tuberculosis to early life; it affects the bony structures, the skin and the mucous membranes continuous with it, and the

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absorbent glands, in preference to the lungs, the brain or the serous membranes. Fatty degeneration of the liver accompanies tuberculosis, the albuminoid or amyloid affection of that organ is a not infrequent attendant on scrofula. Scrofula and tuberculosis do not mutually pass into each other. It is true, that the manifestations of the latter often supervene in the course of the former; but the converse of this does not often hold good, and we do not usually find children suffering from tuberculosis in whom the symptoms of scrofula become superadded, while not unfrequently whole families display one or the other diathesis, in its most aggravated form, perfectly uncomplicated."

In the debate on this subject before referred to, Dr. Jacobi, the President, says: "It is an interesting fact that scrofula is seen apart from the lymphatic glands only in the various modifications of one sort of tissue. Skin, mucous membrane, bone, all the tissues in which it appears, are transformations of what was originally connective tissue. Scrofula would seem, then, to be a disease of the connective tissue, rather than of the system generally."—[N. Y. Medical Journal, April, 1871, pages 462–63.

Says Dr. Wilks—(Guy's Hospital Reports 1869, p. 37,):

"Under the term strumous there have generally been included two very different outward conditions so that, on theoretical grounds, when a student, I had a difficulty in associating the two together, and failed to understand how the small, undeveloped child with pot-belly, crooked legs, blear eyes, sore lips, enlarged lymphatic glands, decayed teeth, altogether dull in mind and body, could be identified with the young person, twenty years of age, dying of consumption, who was tall, well developed, with straight limbs, fine skin, good teeth, and with a highly active intellect. The difficulty was endeavored to be overcome by Sir T. Watson in the description of the two varieties of the diathesis. These have been considered by Sir W. Jenner as altogether different, and I am of the same opinion, seeing that the confirmations are so opposite, and the diseases to which they are liable are so

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unlike. The passage from the first named author is as follows: 'The persons in whom scrofulous disease is most apt to declare itself are marked during childhood by pale, pasty complexions, large heads, narrow chests, protuberant bellies, soft and fleshy muscles, and a languid and feeble circulation. They present many of the features belonging to that pattern of body which is denominated the leucophlegmatic. But the strumous disposition very often indeed accompanies a variety of the sanguine temperament also, and is indicated by light or red hair, grey or blue eyes with large, sluggish pupils, and long, silky eyelashes, a fair, transparent brilliancy of skin, and rosy cheeks. This red color, which is well defined in general, is easily changed, however, to purple or livid, the skin is thin and readily irritated, the sclerotic has often a peculiar pearly lustre, and the extremities are subject to chilblains. Such children are, many of them extremely clever and ready of apprehension, of eager tempers and warm affections, lively, ardent, imaginative and susceptible. This precocity of mind and intellect, while it delights the fondness of the parent, awakens the fears of the more far seeing physician.' I feel convinced that there are here described two such different varieties of constitutions as to deserve the name of distinct temperaments, for I think the strumous child possesses the peculiarities of constitution and tendencies to disease observable through a long lifetime which do not partake of those seen in the tubercular. The difference at the time of childhood is usually one of contrast; the scrofulous child is ill-formed, with large head, protuberant abdomen, often narrow chest and crooked legs, narrow jaws, with teeth irregularly set and prone to decay, the skin harsh and apt to degenerate, mucous membrane also liable to irritation, sore eyes and nose, or a discharge from the ears, lymphatic glands disposed to enlarge, mind sluggish. As the child grows up, the same characteristics may be witnessed in the lethargic operations both in mind and body. The tuberculous diathesis is remarkably different. It is characterized by a superlative activity of bodily and mental functions. The child, at the earliest ob-

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servable period, is precocious; it walks and talks soon, and cuts its teeth early. It is well formed, as regards the framework or skeleton; the head of good shape, the teeth absolutely perfect, features cut in a fine mould, chest very commonly of good formation, or having some peculiarities which Sir W. Jenner has described, and which my own observations confirm—being broad and flat, with the sternum somewhat depressed. This, of course, is not always the form of chest met with in subjects of tuberculous consumption, for occasionally, owing to various causes of impoverishment operating in infancy, the lungs may not have fully expanded, and the chest will be found projected forward, somewhat after the manner of the pigeon breast of rickets, or be simply narrowed from want of development. In the most marked case of tuberculosis phthisis, the first mentioned broad, flat chest is the one that we most generally meet with. Then, again, the skin is mostly fair and thin, the eyes mostly blue or grey (the blue belonging rather to the scrofulous and the grey to the tubercular), pupil large and eyelashes long. The infant is pretty, the adult good looking. The child is precocious, and throughout youth the mind is active, and an enormous amount of knowledge is consumed; at a later period the young man may carry off all the prizes of his college, and then perhaps sink into an early grave. The subject, then, of tuberculous phthisis, or he who is prone to it, presents a finely formed frame, straight limbs, well made head and broad chest; he may be thin and somewhat delicate, but in no wise can he be called underbred, puny, or ill-developed, seeing that the opposite are his characteristics."

TUBERCULOSIS—*the tuberculous diathesis, that state of the system which leads to the formation of a certain anatomical product styled tubercle.*—I believe tuberculosis to be a specific disease, as much so as cancer. It is hereditary; two-thirds of the cases are due, according to Pollock, to this cause:

"The cases of accidental phthisis stand alone to show the non-hereditary form of the disease, and has been elsewhere shown, possess characters peculiar to themselves. They illustrate the fact of the possibility of tuberculosis arising out of

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external agencies, and representing so small a proportion of the whole may fairly be said to be exceptional, and when from these are deducted the instances which are fairly referable in their origin to acute affections, as fever and exanthemata, and when the rheumatic diathesis is also eliminated as a cause, we shall find that they are numerically very few."—[Pollock, Elements Prognosis in Consumption, p. 340.

That able writer, Dr. Jerome Cochran, says:

"It has been the fashion for many years to regard the grey and yellow tubercle as different stages of the same morbid product, but recent researches have gone far to show that they are generally distinct; that the grey tubercle is *specific*, is transmissible from parent to child, and that it is also perhaps infectious; while the yellow tubercle is the product of inflammation, not specific, especially of pneumonia, is not infectious, and is not transmissible from generation to generation."—[Trant. Med. Ass. Ala. 1871, p. 256.

Tuberculosis is an inheritance. The writer of this paper inherited the disease. Dr. Nott said there was a cavity in my left lung. It healed up; the disposition to the further deposition of tubercular matter ceased, as I think, because an issue had set up elsewhere, *(fistula in ano,)* an issue that has lasted twenty-two years. Health obtained on hard terms, but as a medical fact proper to be stated.

When in attendance on myself for an attack of rheumatism Dr. Nott told me that he was subject to rheumatism, and that consumption was hereditary in his family.* He died of it at the advanced age of sixty-nine years.

I will quote what Paget says on the inheritance of cancer, and if the reader will substitute in his mind the word tuberculous for cancerous, he will then have my idea on this subject:

"Our expression then may be, that in the impregnated germ from a cancerous parent one or more of the materials, normal as they may seem, are already so far from the perfectly normal state, that after the lapse of years, by their development

*Pollock says: "The tubercular and the rheumatic diathesis are doubtless intimately allied; the hereditary influence may be the same in both."

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or degeneration, they will engender or constitute the cancerous material in the blood, and it may be the locality apt for a cancerous growth."

And again:

"As with other specific blood diseases, so with cancer, the predisposition to it is a substantial thing; and we should hold that in all the time of latency there is a thing in the blood which will become or generate by combination the effective cancer-material, unless (as in the healthy generation between the cancerous grandparent and the cancerous grandchild,) it be destroyed or retained in the course of natural nutrition."

What is tubercle? The whole trouble in the minds of the profession on this subject is due to the confusion that has arisen from the definition of the word tubercle? Waldenburg says: "There reigned here a confusion such as is seen in few other branches of medicine. Besides the confounding of tuberculosis with pulmonary consumption, one author denotes by tubercle a very different thing from another; what one calls tubercle is to the other nothing but the product of cheesy metamorphosis; what by this one again is called tubercle, is by the other termed "granulations;' a third calls both tubercle; finally for one of the parties the original term tuberculosis disappears entirely, to be replaced by granular metamorphosis. A final union of the parties is now a pressing necessity if science is not to suffer serious injury from what is for the most part a verbal conflict." On this point I agree fully with Niemeyer, who says: "In the present stage of science there is but one kind of tubercle, miliary tubercle, and but one kind of tuberculosis, miliary tuberculosis.' This confounding the varieties of tubercle together and of considering tuberculosis and pulmonary consumption as the same thing has led to much confusion, and it required such master minds as Addison and Niemeyer to place the whole subject clearly before the profession. In 1845 Dr. Thomas Addison read a paper before the Guy's Physical Society on the Pathology of Phthisis, from which I will make one quotation:

"It may be fairly doubted whether in perfect strictness of

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language the term *tubercular*, taken in an exclusive sense, can with propriety be applied to any form of Phthisis; for, however strange and paradoxical it may appear, I venture to submit that at the present moment we are not in possession of any conclusive evidence that either tubercle or its disintegration ever constitutes the primary and essential cause of the disorganization which characterizes fatal phthisis. We have phthisical disorganization without tubercle, and we have phthisical disorganization with turbercle."—[Dr. Addison's Works, Sydenham Society Edition, p. 56.

Tubercle is divided into two kinds, the gray or miliary, and the yellow. These are two distinct varieties, the gray may degenerate and become yellow, but the yellow may commence as such and is not converted into the gray. Tuberculosis and Pulmonary Consumption have always been considered one and the same thing, and when you said Phthisis Pulmonalis, you meant Tuberculosis, and *vice versa*; but now, when we speak of Phthisis we are compelled to qualify it, so as to signify what we mean, and when we speak of true Phthisis we say, "Tubercular Phthisis," and when we speak of that form depending on caseous degeneration we say Phthisis simplex, which is, according to Niemeyer, the product of chronic, especially of catarrhal pneumonia. "It was Bayle in the year 1810 who first applied the name miliary to tubercles, first discovered them in the larynx and trachea, and far more important, first pointed out that clinical and genetic connection between the affection of these different organs which all before him, even Baillie, had failed to see. Consumption was no longer a local disease, confined to the lungs, but a general disease affecting the whole body—a chronic disease of special nature and not depending upon inflammation of glands or lymphatics."—[American Journal Medical Science, January 1870, page 141.

We see, therefore, that tuberculosis is a constitutional disease and not dependent upon inflammation for its cause. Whereas we know that in scrofulosis we must have *inflammation* to develop the symptoms.

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Niemeyer well expresses this point when he says:

"The hypothesis that scrofula depends upon a faulty composition of the blood (dyscrasia), and that the lesions found in scrofulous persons were due to the deposit in the tissues, of a matter circulated by the blood and called a 'scrofulous material,' is almost universally abandoned. The alterations which take place in the skin, mucous membrane, joints, bones, and organs of special sense are of *an inflammatory nature*, and can not be distinguished from similar affections of a non-scrofulous character, excepting by their intractability and the tediousness of their course."

In the very interesting review of Waldenburg's work on Tuberculosis, Consumption and Scrofula, by Dr. J. C. Reeve, of Dayton, Ohio, above referred to in January number American Journal Medical Sciences, for 1870, speaking of these two varieties, the gray or miliary, and the yellow, he says:

"Having traced miliary tubercle through its changes from gray to yellow, the author next considers that kind of yellow matter generally known as 'yellow tubercle,' which has a different origin—'cheesy products not originating in miliary tubercle.' This kind of matter is not tubercle at all, a fact to be kept in mind by the student who has followed writers by whom the yellow matter is termed 'true' tubercle, and by whom no distinction is made between yellow matters having a different origin. That this yellow, cheesy matter is not tubercle is now, we are told, a recognized fact, as uncontested as any in pathology. Andral first showed that simple pus in old abcesses would undergo thickening and become 'tuberculous,' viz: take on this cheesy consistence and appearance. Reinhardt proved that the so-called yellow tubercle of the lungs and other internal organs might have the same origin. Virchow confirmed these views, and showed that cancerous tumors and various other pathological products undergo the cheesy degeneration. The yellow cheesy matter generally described as 'yellow tubercle,' is not, then, tubercle, but is an *inflammatory* product.

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"I will here only bring forward a single fact which bears with overpowering weight on the whole subject. There are certain species of animals in which every simple abcess has the inclination to this cheesy change. At the head of these animals stands the rabbit. If we injure one of these externally with sufficient violence to cause suppuration, there collects at the injured spot a purulent deposit which seldom opens outwardly, but remains encapsulated under the skin. If this abcess be opened, it contains no fluid pus, but a more or less thick matter of cheesy consistence exactly resembling the yellow tubercular matter. That in this case we have to do with true pus, and not with tubercle, is without doubt, and needs no further proof. It is therefore a matter of course, that every one who uses these animals for experiment in regard to tubercle should not only recognize this fact, but distinguish between cheesy matter and true tubercle; otherwise almost every rabbit will be considered tuberculous.

"The yellow matter is found principally in the lymphatic glands under the lungs. The changes in the former from simple hyperplasia of the lymphatic elements, or from simple inflammation, are traced, but need not detain us; externally these affected glands are the signs of scrofula—internally, the cause of 'bronchial phthisis' or 'mesenteric scrofula,' but protest is made against such terms as tuberculosis of the mesenteric or bronchial glands. In the lungs these cheesy deposits show a marked preference for the upper lobe; the larger ones are diffuse, non-isolated, have no nodular projections from their exterior, are often surrounded by traces of inflammatory action, and in general, as well as in particular, give no evidence of an origin by confluence of smaller bodies like miliary tubercles. So markedly is this the case that the term 'infiltrated tubercle' has been applied to them by Laennec and other authors, who have recognized the difference in form, but not in essence."

I have made this long quotation because it contains the whole argument in a nutshell. Scrofulosis is due to this yellow deposit in the glands, and sometimes in the lungs. It has

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inflammation for a cause and is curable. This deposit in the early stages can be absorbed. I have seen so many cases of well marked phthisis, with all the well defined constitutional and physical signs, disappear under the treatment adapted to the idea that it was scrofulous and not tuberculous, that I think the profession should appreciate the fact. I could cite the case of a young man who had all the well marked symptoms, hæmoptysis, cough, emaciation, night sweats, and who had at the same time scrofulous inflammation of the eye. I had no hope of saving the eye. A surgical operation was recommended by one of the first oculists of the South, who was then on a visit to our city, but as I did not expect him to live long I dissuaded him from it. Under appropriate treatment all the constitutional and physical signs disappeared, and, *pari passu* with his general improvement, his eye improved, and though his sight is not quite so good as formerly no one would notice any blemish. It is some years since, and his health continues perfect up to the present time. The time was when I would have given a hopeless prognosis, and I am sorry to say that we short-sighted creatures presume too much upon our diagnosis and prognosis, and thus pretermit those means which, if perseveringly used, might end in success, but fortunately I had read a paper written by the late Dr. Wm. Pepper, of Philadelphia, styled "Remarks on Scrofulous Inflammation of the Lung and Pulmonary Condensation, particularly in reference to the Occasional Similarity of the Accompanying Physical Signs to those of Tubercular Phthisis," and as it is a paper that all cannot have access to, I will quote very freely from it. Dr. Pepper says:

"Upon several occasions, on examining individuals supposed to have been suffering with confirmed phthisis, I have found the upper part of the lungs indurated by chronic inflammation and interspersed here and there with a few tubercles—these latter, however, forming but a very inconsiderable part of the hardened mass. From such facts, I am strongly disposed to believe that scrofulous inflammation not unfrequently attacks the upper lobes of the lungs; and although,

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as a general rule, it will be attended with a considerable deposit of tubercles, yet it occasionally happens that these form but a small part of the disease; so much so indeed that should the hardening of the pulmonary tissue disappear, the remaining tubercles would in many instances be latent or at least not manifested by the ordinary physical signs. It is quite conceivable that an individual might thus be considered as having been cured of extensive tubercular deposit, when in reality the disappearance of the stethoscopic signs was owing to the removal of the accompanying scrofulous inflammation; and this is the more probable, when we bear in mind that this form of pulmonary induration is rarely attended by the rusty sputa and fine crepitant rale, so characteristic of the more acute forms of pneumonia, and by which it may at once be distinguished from tuberculous deposit.

"Scrofulous inflammation and tubercle are so intimately associated in the minds of some, that it might seem paradoxical to speak of the occurrence of the former unconnected with the latter, either as cause or effect; and yet, judging from the pathological appearances above referred to, it is quite probable that this form of inflammation does occasionally invade the lung to a greater or less extent without giving rise to any considerable tubercular deposit, whilst on the other hand it is well known that tubercles may be developed independent of all inflammatory action, as the mere result of impaired nutrition, in connection with a diseased state of the blood, and that, when thus formed, they do not necessarily excite inflammation of the adjacent tissues. It frequently happens, that these two pathological conditions are so blended that it is difficult to decide which was first formed; under such circumstances it might be inferred that which ever was most extensive had also been first produced; and yet, there would be many exceptions to this rule, particularly when it is remembered that the development of inflammation and tubercle may have progressed at very different rates. Dr. Graves in his clinical lectures very justly observes that 'Scrofulous inflammation may affect either the lining membrane or the

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parenchyma of the lungs, giving rise in the one case to scrofulous bronchitis, in the other to scrofulous pneumonia—two affections which may exist separately or combined, and either of which may prove fatal, with or without the development of tubercles in the lungs. Tubercles have too entirely engrossed the attention of those who have investigated the pathology of phthisis. They are a frequent product of the scrofulous diathesis; but the scrofulous bronchitis and scrofulous pneumonia are still more important and do not, as is falsely supposed, depend upon the presence of tubercles in the lungs.' Not only is it probable that scrofulous induration at the summit of the lungs may occasionally be mistaken for tubercular deposit, but it is even conceivable that this condition may, in some cases, lead to the belief that tubercular ulceration and excavation have absolutely taken place. Induration of the lung, from whatever cause induced, when in proximity with large bronchial tubes, frequently gives rise to physical signs more or less characteristic of vomica, and this is particularly true when the solidification occupies the root of the lung as in case of chronic pneumonia, enlarged bronchial glands, or tubercles. Under these conditions a moderate amount of mucous in the tubes may readily give rise to gurgling; whilst the bronchial respiration and resonance of the voice being rendered more intense by the consolidated lung, might be confounded with pectoriloquism and cavernous respiration. The same thing may occur at the summit of the lung, though perhaps not to so great an extent; and this is particularly the case in regard to the right side, where the tubes are larger and more direct than on the left. In several instances at least, I have known physical signs in this locality (such as might readily have been ascribed to tubercular deposit or ulceration) to disappear in an incredibly short space of time; and I am strongly disposed to believe that many of the reputed cures of confirmed phthisis with vomica, have in reality been but instances of scrofulous induration, which it is well known may sometimes be rapidly removed under the use of cod liver oil, iodine and other appropriate hygienic and therapeutic treatment.

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"This is particularly the case in regard to glandular swellings of the neck or other parts, which frequently subside in the course of a few weeks without leaving any traces of their former development; under such circumstances pulmonary irritation and even symptoms of confirmed phthisis frequently supervene. This connection between the recession of scrofulous swellings and the development of pulmonary disease has long been observed by medical men, and was particularly enforced by the late Dr. Parrish in his lectures. So fully convinced was he of this fact, that he deprecated the use of all external applications calculated to discuss such tumors, and considered the reappearance of the external swellings as a certain harbinger of an improved condition of the lungs. In several cases of this kind I have observed that the retrocession of the glandular enlargement was followed by dullness of percussion below the clavicle and other signs of pulmonary induration which might readily lead to the belief of extensive tubercular deposit, and yet the speedy disappearance of these signs with or without a return of the external swelling, has induced me to suspect that they depended rather upon scrofulous enlargement of the deep seated glands and induration of the adjacent pulmonary tissue. When any considerable glandular enlargement exists within the chest it is generally manifested by loud bronchial respiration and dullness of percussion at the upper portion of the sternum or between the scapulæ; occasionally, however, the tumefied glands project into the right or left subclavicular space, and give rise to pulmonary irritation and consequently to symptoms more resembling those of pulmonary than bronchial phthisis. Under the last named circumstances, there being little or no pressure upon the important parts contained in the anterior mediastinum, the superficial veins will not be distended or the respiration hurried and wheezing, as generally occurs in bronchial phthisis; and yet the physical signs, owing to the fact that they depend upon scrofulous enlargement of the glands, may rapidly disappear as the glandular enlargement subsides. The tuberculous matter which gener-

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ally exists in such cases forms but a small part of the tumefied gland, so that when this latter may have become greatly diminished the former will be in a measure latent, as far as regards any indications to be derived from auscultation or percussion; occasionally, however, the enlarged glands contain no tubercular matter, and the recovery may then be absolute and permanent, and not merely apparent and temporary. In early life the bronchial glands are more frequently affected with scrofulous inflammation and tuberculization than at a later period, and MM. Rilliet and Barthez have shown that this condition sometimes gives rise to an exaggeration of the physical signs, and thus leads to the belief that the bronchial respiration and dullness on percussion absolutely depend upon tubercular solidification of the pulmonary tissue itself. In several cases which have fallen under my notice, the most unfavorable prognosis had been formed, owing to the fact that physical signs, indicative of pulmonary induration, existed at the infra-clavicular regions; and yet, judging from the rapid manner in which the lung apparently regained its normal condition, I was strongly disposed to believe that the signs had in a great measure depended upon glandular enlargement. In the case referred to, the individuals had passed the age of puberty, and had at times been subject to swellings of the cervical glands."

I will quote one case from Dr. Pepper's article:

"During the fall of 1847, I was consulted by a young man aged twenty-two years, by trade a tailor; of feeble constitution, but, from all I could learn, without any hereditary tendency to phthisis. From his own statement it appeared that he had been troubled with cough for about two months previous to my seeing him, during which time he experienced some difficulty of breathing, particularly upon the slightest exertion; he had also lost flesh, and evidently suffered with hectic fever; the cervical glands of the right side were somewhat swollen, but much less so than they had been some time previously. Percussion over the right sub-clavian region was dull, and over the same extent the expiratory murmur was

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greatly prolonged and somewhat obscured by mucous rales; at this part there was also considerable vocal resonance. Throughout the rest of this lung the respiration was exaggerated or puerile, and, although the upper and anterior part of the left thorax was motionless during respiration, the space above and below the clavicle was not depressed, as often happens when the summit of the lung is excavated or even indurated by tubercular deposit. The treatment consisted in the application of iodine ointment (grs. xx to the ounce of lard) over the upper part of the chest, and in the administration of eight drops of Lugol's solution of iodine with a tablespoonful of cod liver oil three times a day; a nutritious diet, and moderate exercise in the open air during mild weather, were also enjoined. One month after this treatment had been instituted there was a perceptible improvement both in the general and local symptoms, and by the first of January following, or about three months from the time he came under my care, the physical signs had entirely disappeared, and the patient had improved both in strength and flesh; the cervical glands, however, still remained somewhat enlarged though evidently less than when first observed."

I cannot refrain from making a quotation from Dr. DaCosta's work on Medical Diagnosis, (1st Edition, p. 213–14) as it is so strongly confirmatory of the observations made by Dr. Pepper:

"We meet occasionally with instances in which the physical signs of an infiltration into the lung tissue depart with tolerable rapidity. They occur in those who have a marked scrofulous aspect, enlargement of the glands of the neck, or a scrofulous inflammation of the eyes. In accordance with the generally acknowledged identity of scrofula and tubercle, we would be forced to admit that the disease in the lungs is tubercular. Yet the connection with the enlarged lymphatics, the circumstance that the diminution in size of the glands is often followed by distinct evidence of increased pulmonary deposits; that these depositions are very beneficially influenced by treatment; that they disappear sometimes altogeth-

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er, or only reappear months afterward—all make it a question whether there be not a *scrofulous* disease of the lung independent of a tubercular one, and one moreover which presents a much more favorable prognosis. Among the scrofulous children which throng our public institutions, cases like those alluded to are not uncommon, and any one who has had charge of a large dispensary will recognize the existence of a disorder with the characters indicated. It is certainly unlike the ordinary forms of pulmonary tuberculosis, and it is not bronchial phthisis. It does not present the paroxysmal cough, the signs of pressure on the trachea or large bronchi, and the dull sound on percussion between the scapulæ, which are the common accompaniments of enlarged and tubercularized bronchial glands.

"Some years since I had an opportunity of inspecting the lungs in one of these instances of supposed pulmonary scrofula. I was treating a little girl for this affection when she received a severe injury which resulted in her death She had, when first seen, an eruption on the scalp, sore eyes, and enlarged cervical glands. She was also very much troubled by a cough. A marked dullness was detected at the upper portion of the left lung. Here, as in fact throughout the whole of the left lung, and the upper part of the right, the respiration was rude. But for two weeks before her death the symptoms and signs had markedly improved under cod liver oil and iodide of iron. She was rapidly losing her cough and gaining strength, the dullness on percussion was diminishing, the respiration becoming less and less rude. At the autopsy the greater part of the left lung and a portion of the right were found to contain yellowish, cheesy deposits, which exhibited under the microscope a large quantity of granules and some shriveled cells, without distinct nuclei."

We therefore conclude that scrofulosis and tuberculosis are distinct conditions of the system. With Niemeyer* we would say that scrofulosis is more a condition of the system than an

*The term Scrofula signifies a morbid condition of the system.—Niemeyer.

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entity. That scrofula might result in phthisis simplex, but not in phthisis tuberculosa. We are not willing to go so far as Hueter, (Med. Rec., N. Y., March, 1835,) who says "that scrofula is the soil in which tuberculosis is produced." We agree with Dr. Cochran that tuberculosis is a specific disease, transmissible from sire to child. That it is incurable by any means yet known to the profession.

That it is our duty to treat all cases of phthisis as if they were scrofulous or curable. That the means best adapted to this end are: Climate, diet, cod liver oil, iodine, alcohol.

Dr. Pepper says in the paper above referred to:

"Cod liver oil appears to exercise a remarkable influence in controlling scrofulous inflammation, and it has appeared to the writer not improbable, that this remedy will be found to be more especially serviceable in those forms of phthisis where the parenchyma of the lung is indurated rather by scrofulous inflammation than by tubercular deposit, and hence it is that the oil is particularly efficacious in bronchial phthisis, and in those forms of consumption which are associated with the external evidences of scrofula, such as enlargement of the cervical glands and other unmistakable indications of this diathesis. Under these last mentioned circumstances it is no unusual thing to find a subsidence of the local signs corresponding with the general improved condition of the patient; whereas, in tuberculous phthisis, in the strict sense of the term, the auscultatory phenomena generally persist, notwithstanding the improved state of health; owing to the fact that they depend upon tubercular deposit and not upon scrofulous induration, as is generally the case in the first named class of cases. Judging from the numerous instances in which tubercular induration and vomica are supposed to have disappeared since the introduction of cod liver oil into general use, it would be natural to conclude that such instances would, at least occasionally, fall under the observation of those connected with a large general hospital, where numerous cases of tubercular phthisis are constantly admitted and under treatment; and yet I am free to declare that it still remains for

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me to witness the first case in which an *unequivocal* tubercular vomica has become cicatrized, whether revealed by an examination post mortem, or during life by the gradual disappearance of the characteristic physical signs. I have already expressed my belief in the occasional occurrence of such cases, but experience has convinced me that they are exceedingly rare; in many instances, the auscultatory signs would be greatly diminished, or even temporarily disappear, owing to some obstruction of the communicating bronchial tube; but, in a few days or weeks, the same unwelcome sounds generally returned; in others, the physical signs depended upon pulmonary induration conducting the sounds from the large bronchial tubes, and gradually disappeared as the conducting medium was restored to its natural condition. At the same time, I most cheerfully bear testimony to the very excellent effects in many cases resulting from the use of the cod liver oil. Inducing, as it frequently did, an abatement of the hectic symptoms and expectoration, together with an increase of strength and flesh, it appeared, at least for a while, to cause the lamp of life to burn brighter and longer, and thus afford precious time for the use of other important measures both hygienic and therapeutic. In incipient phthisis, it occasionally seemed even to correct or so modify the existing diathesis as to prevent the further deposit of tubercular matter; but, as before stated, in no instance that has fallen under my observation did it appear materially to promote cicatrization of tubercular cavities."

Dr. Wilks, speaking of this remedy, uses the following language:

"Cod liver oil certainly seems to be more efficacious in consumption than in any other disease, and I have every reason to believe that alcohol is antagonistic to the tuberculous state. It may be true that drunken and debauched individuals die of what is usually styled phthisis, but their form of disease is rather one of chronic pneumonia or fibroid phthisis than tubercular. Alcohol, I believe to be good as a medicine, and in young children I have administered it with the best success." [Guy's Hospital Reports, vol. xiv., pages 48 and 49.

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Dr. Flint is very emphatic in his recommendation of alcoholic stimulants in phthisis. He says:

"Basing my opinion on clinical experience, I do not hesitate to express the belief that in a certain proportion of cases, alcohol exerts a curative influence. Of the sixty-two cases of arrested tuberculosis which I have analyzed, in fourteen the treatment, irrespective of hygienic measures, consisted exclusively of alcoholic stimulants. In nine of these cases the recovery was comparatively complete; the patients remaining well after periods dating from the time of the arrest, ranging between four months and eleven years. Some cases which I have observed seem to exemplify, in a striking manner, the curative effects of alcoholic stimulants." [Flint's Practice of Medicine, page 294.

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PUERPERAL ECLAMPSIA:

CHLOROFORM—FORCEPS—PUERPERAL MANIA.

BY W. A. BRADFIELD, M. D., OF EAST PASCAGOULA, MISS.

At 6 o'clock A. M., April 3d, 1875, I was called to see Emma M., (Creole) primipara, aged twenty-five years. I found that for several days she had complained of great fullness in the head, and some headache; and that the day before and last night had vomited a great deal. At four o'clock this morning she was taken with convulsions, and has had two, in one of which she fell full length from the bed on the floor. On examination I found the os partially dilated, with waters discharged and a vertex presentation. Every thing seemed to be perfectly natural, and nothing wanting but a few good pains. I had scarcely finished my examination when she was seized with another violent convulsion, which seemed to cause every muscle in her body to become perfectly rigid. I then chloroformed her, and instructed the midwife how to keep her in that condition until I could go to my office and get my instruments and more chloroform. I remained with her for several hours, hoping a natural pain would come up and expel the child, and to promote this end, I administered a teaspoonful F. Ext. Ergot. This seemed to have no effect, and allowing her to become partially from under the influence of chloroform, she had another violent convulsion; after which I was not able to hear the fœtal circulation. I then determined to deliver with forceps as early as possible. The os uteri not being sufficiently dilated, I proceeded with my fingers to dilate

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sufficient to introduce the forceps, which I found some difficulty in adjusting properly, as the head was high up; but finally succeeded in locking them, and delivered a still-born girl, well developed and weighing about eight pounds.

I felt very much gratified that I had delivered the child, and thought my patient would have no more trouble; but, to my great surprise, as soon as the effects of the chloroform wore off, she had another convulsion. I then gave ⅓ gr. morphine hypodermically, and left her at one o'clock P. M. quiet and sleeping. I returned in a few hours to spend the night with her, and at nine o'clock P. M. she had another convulsion; administered chloroform and ⅓ gr. morphine, hypodermically. She arouses frequently now, talks incoherently, and has to be held in bed. Pulse 120, with raised temperature.

April 4th, four o'clock A. M. Has been sleeping, but is a little restless now. Can not get her to swallow anything; gave ⅓ gr. morphine hypodermically. 3 o'clock A. M. More rational, and drinks a little water. 11 o'clock A. M. Pulse 120; administered ⅓ gr. morphine hypodermically. 7 o'clock P. M. Quiet; pulse unchanged; symptoms of mania begin to appear; wants to know "what has happened;" "if any thing is the matter?" Recognizes every one, but does not seem to have any idea of what has occurred. Ordered 20 grs. bromide potass. every four hours.

April 5. Still simple in her expressions; pulse feeble and wiry; drinks milk and beef soup; tongue coated. Ordered 1 gr. pulv. opii. every four hours. 7 o'clock P. M. Has taken 2 grs. opii.; spit out the third dose, and has become very sullen, and will not answer questions. Pulse stronger, appetite good.

April 6. Rested well last night; woke up only once, and looked very well; pulse more natural, perfectly rational and craving something to eat all the time.

April 7. Pulse natural, and she perfectly rational. Had four or five operations from enema.

April 8. Convalescing very rapidly. Ordered 2 grs. quinine and twenty drops mur. tinct. iron to be taken three times a day.

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One point of interest in the above case is, the happy effect of the hypodermic administration of morphine, during her stage of unconsciousness and inability to swallow. The pleasant condition of quietude it kept her in, saved her from several hard convulsions.

NECROSIS AND CARIES OF THE HUMERUS.

The father and mother brought a child eighteen months old to my office, saying it had fallen from the bed about twelve months ago and broken its arm, and that they carried it to a doctor living close by, who said, after an examination, that it was not fractured, only bruised; and gave them some liniment to rub it with. The liniment was all used, and in about two weeks after receiving the fall they noticed the bone swelling. They then consulted their regular family physician, who found that suppuration had taken place. He opened the abcess formed, and it discharged a large quantity of pus. He further thought the bone must have been broken. The arm has continued to discharge pus up to this time. On examination, I found two fistulous and sinus tracts leading to the bone, discharging a fœtid and ichorous pus, and having their orifices surrounded by protuberant and red granulations. On the introduction of the probe, I could feel loose pieces of necrosed bone. I made my diagnosis as necrosed bone. But as the child was so young, I was rather afraid to administer chloroform. But happening in Mobile in a few days afterwards, I consulted Dr. J. T. Gilmore as to the propriety of administering chloroform to a child so young, and he told me that his experience was, children stood chloroform very well, and that he did not anticipate there would be any trouble in the case. And further told me I would probably find caries with the necrosis.

On the 15th of February, with the assistance of a non-medical friend, I operated by denuding the bone sufficiently to bore in with a trephine two holes about one inch apart. I then chiseled out the piece of bone between the two orifices, and pulled out several pieces of loose necrosed bone, and then

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chiseled off a good deal of soft carious bone. The child stood the chloroform and operation finely. The soft parts healed up very rapidly, and the child's general health improved wonderfully fast. After the tissues had healed up entirely, there was another opening formed which discharged several small pieces of bone. The sinus is still discharging some pus, but no pieces of bone can be felt with the probe. The bone is very much reduced in size, and the child has good use of the arm.

On April 10th I commenced injecting a strong solution of tinct. iodine and carbolic acid in the sinus. I would further state that I have recently received one of Esmarch's rubber tourniquets, which, if I had been in possession of at the time, would have been of great assistance to me in controlling the hæmorrhage, which was very profuse, and delayed the operation very much. I have never had an opportunity of using this ingenius apparatus. But from the high commendation it has received from the profession generally, and the appearance of the limb after its application, I am satisfied it is of great value to our surgical department. All of us can too frequently recall cases where we have been annoyed and delayed in operations from excessive hæmorrhage, when it was of great importance to the safety of the patient to hasten the operation. This instrument seems especially adapted to such operations as above cited; for it is highly important that we should have the parts perfectly clean, that we may see every particle of diseased bone and remove it. And I am confident if I had used Esmarch's tourniquet in the above operation, there would have been no pieces of bone left there to be discharged after the operation was performed.

Thinking some of the profession present may not have had an opportunity of seeing this most valuable instrument, I have brought it with me, that they may examine it and see the simplicity and great advantges offered by its use. The *modus operandi* is readily appreciated. The application of the broad elastic bandage drives both the arterial and venous blood from the lower extremity of the limb, by its uniform

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and continued pressure, and the tubular or narrowed rubber cord prevents the return of arterial blood to the limb. The appearance of the limb is just like that of a cadaver, and the contrast below the constriction with the flesh above is very striking; and on removal of the rubber cord, the blood returns very rapidly to the bloodless limb.

The idea of performing a capital operation without the loss of a drop of blood is certainly a very novel one, and something the surgeon will hail with great joy and enthusiasm; and never fail to recognize Esmarch as a great benefactor to mankind and our art of surgery.

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A REMARKABLE CASE OF TWIN GESTATION.

BY A. S. M'KEITHEN, M. D.

A colored woman in the town of Prattville gave birth in the month of March last to two children, one of which was a mulatto and the other a full blooded negro. There was only a period of fifteen minutes between the time of delivery of the first to the time the second one entered the world—the dark child being born first. The umbilical cords were distinct and independent, and entered the placenta at a common point. The placentæ were united or rather blended, and the mass a great deal larger than occurs at single birth. The mother of these children is only a shade lighter than our darkest Africans, with kinky hair and flat nose. She has been married about ten years, her husband being exactly the same type of negro as herself, and she has borne four children previously at single birth, all black, resembling very much the husband and wife. Now, there is nothing remarkable in this case except the difference in the color and caste of the infants—the one being bright colored, straight, reddish sandy looking hair, and hazel eyes—the other black, flat nose, thick lipped, black, kinky hair, and black eyes. Both are well nourished—the light colored child looking the healthier, though the dark one is the larger. I only wish to call the attention of the Association to this case that it may be noted among the uncommon occurrences that are recorded in the history of Gynocology, and let those who are disposed speculate upon the theory of duplex conception, and the remarkable fact that different fathers may be the authors

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of beings conceived at short intervals, and brought forth into the world at the same time by a common mother.

Women are generally uniparous, and we regard as unusual the occurrence of twins, but how much more astounding is it to find commingling at the same time in the same womb the vivified germs of men of different "race, color, and perhaps *previous conditions of servitude.*"

But there is nothing in this remark to controvert the supposition that different men of the same race may furnish the rudiments to each individual embryo, which the uterus may contain, as I shall hereafter illustrate by example.

When we come to consider that both glands of the uterus can furnish an ovum simultaneously, and each ovum is liable to impregnation, (as often takes place in case of twins,) can we not suppose that the product of different men, and of different races of men, who may engage in coitu in quick succession, may impregnate each ovum, the one independent of the other. And so we also know what takes place subsequently.

Each fœtus is contained within its own amnion and chorion, each its own liquor amnii, and each has its own chord and placenta.

> "Each distinct from the other,
> Is nourished by its mother."

But I shall content myself with giving you a list of cases that have come under the observation of others, so far as I have been able to find them recorded in works at my command. Doubtless there are many given which I have not seen, and many remain yet unreported. The one I shall notice was related to me by Dr. Hundley, which occurred in the practice of his preceptor, and, unlike the case I have just reported, both supposed fathers were white men.

A married lady, in good standing in society, was confined, and delivered of twins, both white, but so unlike in appearance that it arrested the attention of the accoucheur and he determined to investigate. As the children grew on, their features became more dissimilar, the one had black hair, dark

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eyes, and dark skin, the image of the father, the other light sandy hair, blue eyes, and fair complexion, which corresponded exactly to the features of a drug clerk, who was intimate with the family. The Doctor finally visited the mother, and with threats of exposure, extorted from her a confession that on one occasion her husband left home, to be gone a couple of weeks, and being visited by the drug clerk, she received him in her embrace. Just as he had completed his illicit intercourse, the husband unexpectedly entered the gate. The clerk slipped out the back way unnoticed, and the husband took his place in the nuptial bower. The wife conceived, and gave to the world another evidence that twins can be born of different fathers.

I have been informed by Dr. James Bowen that he saw a case similar to the one I have here narrated, which happened in the practice of Dr. Barron, of Jones county, Georgia. I will conclude by giving you a transcript from the foot notes, in Ramsbotham's Process of Parturition, with author's views on the subject of which I am writing.

A white woman at Charleston, S. C., was delivered, in 1714, of two children, one black and the other white. This difference in color led to an inquiry, and she confessed that on a particular day immediately after her husband had left his bed, a negro entered her room, and threatening to murder her if she did not consent, forced her to submit to his will.

Dr. Mosely has recorded another instance somewhat similar. (Tropical Diseases, p. 111.) It occurred within his own knowledge, on Shortwood estate, Jamaica. A negro woman brought forth at a birth two children of the same size, one of which was a negro and the other a mulatto. On being questioned, she admitted that a white man belonging to the estate came into her hut one morning before she was up, and she suffered his embraces almost immediately after her black husband had left her.

Dr. Dewees (Philadelphia Medical Museum, vol. 1,) has related, that a servant in Montgomery county was delivered of a black and white child at one birth, which were often seen

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by the Doctor. He states, also, that on the report of her pregnancy, both a black and white man disappeared from the neighborhood; and Elliotson (Notes to Blumenbach, p. 485,) has put on record, that Mr. Blackaller, of Weybridge, sent him the following account: A white woman of very loose character left her husband, and some time afterwards returned pregnant, to the parish, and was delivered in the workhouse of twins; "one of which," says Mr. Blackaller, "was born of a darker color than I have usually observed in the infants of negroes in the West Indies; the hair quite black, with the woolly appearance usual to them, with flat nose and thick lips; the other had all the appearances common to white children." That these respective twins were not the offspring of one parent is very evident, and a second impregnation, therefore, must have taken place; but we have proof in two, at least, that the connections followed each other quickly, before any changes could have been commenced in the uterus.

With the knowledge, then, of such accidental occurrences in our possession, we are warranted in believing that, in the case of a woman living with her husband, twins might possibly be the result of two separate connections, if only a short period intervened between them.

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NYSTAGMUS.

BY J. S. BANKSON, M. D., OF JACKSON COUNTY.

Miss R., aged nine, living in a miasmatic climate in Jackson county, was generally healthy, except a few chills and fevers, up to 1872; some time before May was taken with nystagmus, which is said to be an epileptiform affection of the oculo motorial centres. Her spells would come on during the day, sometimes twenty or more, lasting from one to about two minutes. The oscillations of the eyes were very frequent, (a kind of dancing of the eyes, termed by some,) and the alternate movements of the lids at the same time. During a paroxysm her head would be turned to one side, and downwards generally, a kind of sinking of the system, and the chin almost on the breast; the pupils were dilated so that she could not see well, immediately after a fit, and her mind a little confused; but in a short time would answer questions intelligently, walk about as usual, do turns, was perfectly lively, and otherwise healthy until, after treatment a month or more, she had a few chills, which were cured by quinine and iron.

Treatment May 10th (before I saw her), was strychnine in moderate doses, about ten days, without apparent benefit. May 20th, I used brom. potass., 4 to 8 grs., thrice daily; continued until June 2d with some apparent benefit, when her father undertook to bring her to me (at Stevenson), a distance of eight or ten miles, on horseback; but her paroxysms were so frequent, that he stopped with her at Mr. H.'s, about four miles from town, where I visited her the first time; continued the brom. potass. in larger doses, about 10 grains thrice daily, a gentle purgative occasionally, with slight pus-

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tulation on the nucha by croton oil lin. Then, June 4th, he started with her again, but stopped in about half a mile, in consequence of her inability to ride from the effects of the spell, at Mr. T. R.'s, where I visited her; and near there, at Mr. I. P. R.'s, I saw her have two paroxysms.

I continued this treatment until the 17th of June, when I commenced iodide potass, 5 to 8 grs. three times a day, with a little quinine and tinct. iron, completely curing her of the nystagmus and chills by July 2d, when I dismissed her.

She has remained well ever since, so far as I know.

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CLIMATE OF THE UNITED STATES,

CONSIDERED WITH

REFERENCE TO CONSUMPTION AND PNEUMONIA.

BY W. D. BIZZELL, M. D., OF MOBILE.

In the consideration of this subject, we will in the first place direct your attention to those particular sections of the country which are alleged to be peculiarly fitted for the development of these particular diseases of the respiratory organs, aggravate their presence, or augment their fatality; and in the second place, examine into the characteristics and merits of some of the alleged health resorts for those suffering from chronic pulmonary lesions.

PART I.

The vast area embraced within the limits of this Republic, extending as it does from the 97th to the 120° of longitude, and from the 25th to the 49th parallel of latitude, traversed by mighty rivers, lofty chains of mountains, and elevated plateaus, presents great diversity of climate, exerting a varying influence, either for good or evil, in restraining or hastening the inception of particular maladies, or retarding or accelerating their fatal tendencies after inception.

In any general consideration of the prevalence of diseases and the rate of mortality of different sections, we find that the law of average to a considerable extent prevails. The disease producing the greatest ravages and heading the lists of mortality in one section, in another is reduced to a minimum,

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only, however, to be superseded by some other malady equally fatal; so that the death rate is about evenly balanced, except, probably, in a few favored localities. This compensatory distribution of disease prevails, as we shall see, to some extent in the distribution and prevalence of affections of the organs of respiration; not, however, so markedly or perfectly, but approximately.

We shall first discuss these principal diseases, pneumonia and consumption individually, with reference to their prevalence and fatality in this country. Enquiring in a special manner into the conditions of climate that prevail, such as is expressed by the conditions of temperature and moisture incidental to, as well as the elevation of, the locality. The first that claims our attention, and most forcibly, too, in view of its great mortality, is consumption, that dread disease which, coming so often, clad in the livery of deception, stalks into the homes of rich and poor, and oft, ere we are aware, has irrevocably claimed the victim as its own, most frequently choosing the loveliest and fairest, the truest and best of our race; a disease possessing interest, not only from the inexorableness of its fatal tendencies, but also from the actual mortality produced by its ravages, for, according to the statistics of the U. S. census for 1870, no less than 69,896 persons were cut off during that census year by this disease alone, or nearly thirty thousand more than from any other single cause. Yes, 69,896 in one year, or one death to seven from all other causes combined.

And the death rate seems rather on the increase, for in the vital statistics for 1860 the mortality of consumption is set down at 49,082, or one death to eight of all other causes combined; for 1850 it is put down at 33,516, or ten deaths from other causes to one of consumption. The mortality for 1850, as compared with 1860 and 1870, was relatively greater, however, than the rate of one in ten would at first sight seem to place it, for we must remember that no less than 31,506 persons died during that census year from cholera, and 20,556 from dysentery, the two combined in the aggregate amounting

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to a little more than 52,000, while the deaths from both these causes put together and both census years of 1860–70 combined, amount to only about 20,000; so it is fair to conclude that there was not so great an increase in the mortality of phthisis from 1850 to 1860, as the vital statistics at first sight would seem to place it.

In the discussion of this section of our subject, the prevalence of consumption and its distribution among the several States of the Union, we will take the vital statistics of the United States census for 1870 as our guide.

Commencing, then, with the State possessing the greatest mortality, we find that State to be Maine, where the deaths from phthisis are 1 to every 3.9 deaths from all causes, or one death to every 315 of its population; more than one-fourth of the deaths from all causes.

Ranking next is New Hampshire, with a death rate of 1 in 4.5, or not quite one-fourth of the deaths from all causes; one death to 334 of her population. The District of Columbia stands next on the lists of mortality, with one death to 4.6 from all causes; one death to every 298 of its population.

The mortality from phthisis, in the States of Vermont, Rhode Island, Connecticut, Delaware, New York, New Jersey, Ohio, Pennsylvania, *in fact every State and territory of the Union north of the 38th parallel*, ranges from 1 in 3.9, in Maine, to 1 in 11 deaths in Kansas; and in no State north of this does the mortality fall so low as 1 in 12, save in the territory of Wyoming, where the statistics are too scant to be worth much, or give much indication of what the mortality may be when the territory shall have become more populous and the mortality from all causes greater.

The death rate even of Minnesota is 1 to 7.6 deaths from all causes, while that of California is still greater, or 1 in 7.2.

If we begin at the other extreme of the tables, we find the territory of Arizona almost possessing an immunity from this disease, there being only one death in 250 from all causes; and to show that it is not the small number of deaths recorded that make this proportion in the statistics, we have only to

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refer to the heading of pneumonia to find forty-two deaths, or one in six, from this cause.

The next is New Mexico, where the death rate is only 1 to 26.2 deaths from all causes; Nevada, death rate 1 in 20.5; Florida 1 in 17.3; Texas, east of the Colorado, 1 in 16.9; and Texas, west of the Colorado, 1 in 15. Next come most of what are known as the Southern States, two of which—Florida and Texas—we have already mentioned. The former of which, 1 in 17.3, the mortality ranks lowest; while Louisiana ranks higher, 1 in 10.3; Georgia, 15.6; Alabama and Arkansas, each, 14.2; Mississippi, 13.2; South Carolina, 11.2; while North Carolina is set down at 8.6, and Virginia at 7.2.

Having now very briefly sketched the distribution of phthisis among the several sections of the Union, we will proceed to discuss pneumonia in the same manner, and afterward examine into the climatological conditions that prevail in the several sections.

The State possessing the greatest mortality from pneumonia is Arkansas, where it is set down at 1 in 5.1, not quite one-fifth of the deaths from all causes. Arizona ranks next, 1 death in 6; Texas, east of the Colorado, next, 6.7; Alabama, 7.2; Kansas, 7.6; Mississippi, 7.8; Florida, 8.4; Missouri and Georgia, each, 1 in 10; Kentucky and Virginia, each, 10.5; South Carolina, 10.4; Louisiana, 11.2; Texas, west of Colorado, 1 in 15.2.

Turning, now, as in the discussion of phthisis, to the other extreme of the tables, we find the territories of Montana and Idaho to have the lowest mortality from pneumonia, the former only 1 in 61.7 from all causes, and the latter 1 in 50.

The mortality statistics, however, of these territories are not worth much, on account of the sparseness of the population. The Territory of Washington and the State of Oregon show a mortality from this cause, respectively, of 1 in 44.6 and 20.7. Next, then, in point of immunity are what are known as the Eastern States, with a mortality ranging from 1 in 15.6 in Maine, 15.9 in Michigan, 19.7 in Connecticut, to as high as 1 in 11.8 deaths in New Hampshire.

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We will now proceed to discuss the climatological conditions that prevail in the several sections, the relative mortality of which we have just had under consideration. Beginning with the State of Maine, where, as we have seen, the mortality from phthisis was 3.9, or nearly one-fourth of the deaths from all causes; while the death rate from pneumonia was only 1 in 15.9, we observe that it is almost, if not quite, as far north as any section of the Union, being nearly equally bisected from east to west by the 45th parallel of latitude. We also find that it is the extremest eastern portion of the continent of the United States, by nearly the whole width of the State, and borders immediately upon the Atlantic, with a mean temperature for the year, according to Prof. Henry, of 40 degrees in the interior, and 44 degrees near the coast; and, according to Blodgett, a mean spring temperature of 46.3 deg., and winter 21.6 deg.; with an average rain-fall in the region farthest from the coast of 40 inches, and 48 along the latter; with an elevation above the level of the sea, along the coast for fifty or sixty miles inland, less than 400 feet, or at least it attains that elevation at about this distance from the shore; thence gradually rising to the mountainous region in the western portion of the State, where it attains an altitude of about 2,000 feet.

In the remainder of those States bordering on the Atlantic, above the 40th parallel, whose great mortality from phthisis we have already shown, we find a somewhat lower temperature, 44 deg. to 48 deg., as we come further south, being the mean for the year; the mean for the winter ranging from 23 deg. in Massachusetts, to 31 deg. in the neighborhood of New York city; the snow lying on the ground throughout all this region from the middle of November, and often earlier in Maine, to the middle of March or first of April. The States bordering along the Atlantic, in addition to the low temperature which we have seen they possess, have an atmosphere more or less charged with moisture. For in the winter season the air blowing from off the neighboring waters, warmed as they are by the ascending current of the Gulf Stream

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striking the shore, gives the coast region a mean temperature for the year about four degrees lower than the more inland regions, as far south as the 40th parallel. This warm sea air coming in contact with the colder land air, and the cold cliffs and other objects constituting the surface of the earth, it becomes partially condensed, and we have fogs, mists and snow storms. It is to this same cause that are due the notorious fogs off the coast of New Foundland. While the snow is melting and the frost thawing with the approach of spring, these are factors to produce this condition of cold, combined with dampness, conceded by all authorities to be the chief climatic factors in the development of phthisis.

In the middle northern States, as Pennsylvania, Michigan, Ohio, Indiana, Wisconsin, Iowa, and others, where, as we have seen, the mortality ranges from one death in five from all causes to a little more than one in seven, there are various physical and climatological conditions. In the State of Michigan, where the mortality is one in six, the rain-fall is less in its more northern portiou than any of the immediately surrounding States of the Union, though the neighboring region, the dominion of Canada along the northern border of the lakes Superior and Michigan, has about the same—28 inches; while in the southern portion of the State the rain-fall is 32, 36, 40 inches, an annual rain-fall of about the same as the surrounding States. Mean annual temperature for northern part of the State is 40 deg., while the southern, in common with the upper portion of the States of Illinois, Indiana, Ohio, and Pennsylvania, is about 52 deg. The territory embraced in the latter States above enumerated is from 400 to 1,000 feet above the sea level. The climate of Minnesota and the elevated plateaus and parks constituting the eastern slope of the Rocky Mountains, we will discuss when we come to consider the health resorts in the United States for consumptives. The States on the Pacific coast, above the 38th parallel, possess wide variations and marked contrasts in their rain distribution. The districts bordering immediately upon the sea have a very large amount of rain, commencing at San Francisco,

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where the mean annual rain-fall is 20 inches, the amount of precipitation increases as we go farther northward, till, at Astoria, it is 72 inches; and two degrees further north the enormous amount of 80, nearly 20 inches more than any other section of the United States. The rain-fall, however, rapidly diminishes, even at a short distance inland, till we come to the Cascade mountains, east of which the mean rain-fall is only 12 to 20 inches for the year.* The winter rain-fall at Astoria, according to Blodgett, is about 23.5. In the rain precipitation along the coast region of Oregon and Washington, more especially that for the winter months, there is almost a complete analogy to the western aspect of the British Islands and Normandy.† And in the exhaustion of the major part of the moisture borne inland by the south-western winds from off the warm waters of the Pacific, its condensation and precipitation along the sea coast and western slope of the Cascade Mountains, and the very limited amount that passes over and is precipitated to the east of this range, present the same characteristics only in a more exaggerated degree as are observed on the west coast of Ireland and along Magillicuddy's Reeks, mountains of Kirry, the condensing power of which Prof. Tyndall so graphically describes.‡

The mean temperature for the year along the region of the sea shore is 52 deg., while the region further inland is from 40 deg. to 44 deg.; the mean winter temperature is only about ten degrees lower than the summer. We have, then, while not an absolutely cold climate, still a cool one for the major part of the year. It is also exceedingly damp and rainy throughout the region where the great mass of the population reside—namely, along the sea coast; and we would expect a larger mortality from phthisis, and the mortality does rank higher—namely, 1 in 5.6 deaths from all causes in Oregon, and 6.4 in Washington.

The death rate of California is 1 in 7.2 deaths from all causes, a mortality largely due to the deaths occurring in the northern two-thirds of the State; the lower third of the State,

*Prof. Henry. †Blodgett's Climatology. ‡Forms of Water.

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as we shall see further on, possessing such characteristics as to entitle it to be regarded as one of the health retreats in certain cases for persons suffering from phthisis. At San Francisco the temperature is rather low, cool and equable, 52 degrees being the mean for the year, rarely varying from this more than a few degrees either winter or summer. On the other hand, in some of the interior valleys the temperature for many days in the summer runs very high, often indicating 110 deg. in the San Juan valley. The effect of the high temperature of the interior is to cause the colder air of the Pacific to rush with great violence through such openings along the precipitous coast as the Golden Gate at San Francisco affords. Just in proportion as the summer advances, the force of the wind augments, making the summer months in San Francisco the most disagreeable of the whole year; for, though the wind is charged with more or less moisture, it rarely rains, and to the other evils is added the clouds of dust raised in the streets by its passage.* The climate of Southern California we will discuss when we come to the section of our subject relative to Health Resorts; also, the territories of Arizona, New Mexico, and those high and dry regions along the western slope of the Rocky Mountains.

We see, from all that has been said, that there is but one factor that is constant, and that we can fairly believe to be the determining cause that places the preponderance of the mortality from phthisis in the more northerly section of the Union, and that is the relative lowness and frigidity of the temperature. The greatest mortality we have seen to be continually placed to the northward of the 38th parallel of latitude. It can not depend upon the humidity as expressed by the rainfall, for in this particular the southern States of the Union, as we will see when we come to study the climatology of pneumonia, greatly surpass; and besides, we see that differences in the humidity among the more northern sections, as between Maine and Minnesota, has always been to give a less mortality to the dryer. And we think it may also be asserted, with-

*Blodgett.

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out fear of contradiction, that the only difference between one section and another of the Union, above the 38th parallel, as a habitat for this disease, is its relative dryness, no degree of elevation above the sea level being of any advantage, unless it is at the same time dry.

We will now proceed to the consideration of the climatology of that portion of the Union where pneumonia takes the front rank on the rolls of mortality. The State having the greatest mortality from this cause is Arkansas, where the death rate is 5.1, nearly one-fifth of the deaths from all causes. The State of Arkansas has nothing special in its latitude to account for its distinguishing position, if we may so call it, in connection with this disease, being nearly equally bisected by the 35th parallel of latitude. Nor is the rain-fall greater than of most of the other southern States, or indeed not nearly so great—44 inches in the more northern, and 48 in the southern portion of the State, being the mean for the year; nor in its relative position above the sea level, ranking in this respect about as Alabama or Mississippi, being less than 400 feet along the course of the several valleys produced by the many rivers that traverse it, and gradually rising higher, till in the more northern and western portion of the State, it attains an elevation of from 800 to 1,000 feet. One thing, however, preeminently distinguishing the physical aspect of the State, is the number of rivers traversing its borders; the mighty Mississippi forming the eastern boundary, and traversing it, the White, Arkansas, Sabine, Wachita, and Red; into these larger we have many smaller streams emptying, besides bayous and lakes innumerable; the whole forming for the State a vast region of rich and alluvial soil, a very paradise for cotton, negroes, and *malaria*. And as we have ventured the opinion, based as we believe on facts, that the larger per centage of deaths from phthisis in the north is caused mainly by its higher latitude, so we believe that the preponderance of pneumonia in the South is due to the greatly preponderating amount of malaria and malarial influences that prevail in that section. The mortality from pneumonia ranks high in

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Alabama, according to the census of 1870, one to 7.2 deaths from all causes. And we know that malaria is recognized as the special bane of this fair and fruitful State, by all thoughtful medical men within her borders. We do not claim that every case of congested and solidified lung is due to the influence of malaria, but we do believe that malaria has much to do with the production of a large number of the fatal cases of pneumonia that occur in this southern country; and while this element does not manifest itself in cases occurring in the cities, and falling in the hands of the metropolitan practitioner, the physicians practicing in the malarious regions of Alabama, will bear me out in the assertion, that in precisely those localities where the malarious poisoning is most intense, and where in summer the varied forms of intermittent and remittent are most prevalent, on the approach of winter furnish their most serious and fatal cases of pneumonia. In the very houses and among the very people where in summer he was called oftenest, and where several members of the family would be prostrated at one and the same time with various types of intermittent and remittent, as winter approaches he will be called to treat the same people—and it may be several members of a family, either at one and the same time, or in succession,—for pneumonia. And this will occur so often that he can only believe that malaria and pneumonia stand in the relation of cause and effect. In Mississippi, where, as we have seen, the death rate from pneumonia was 1 to 7.8 deaths from all causes, there are abundant evidences of the working of malaria; bordered on one side by the rich valley of the Mississippi, and traversed by numerous streams of greater or less size, some of which, as the Yazoo, have considerable valleys of their own, the higher regions consisting largely of prairies, and such other characteristics of soil as develop a large amount of malarial poison. The mean temperature in the southern part of Alabama and Mississippi varies from 68 degrees, the mean at the city of Mobile, to 64 degrees, the mean temperature for the year at Montgomery, Alabama, and Jackson, Mississippi; the more northern portion of both

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States registers a mean of from 60 deg. to 58 deg., and in the mountains of North Alabama as low as 56 deg. for the year.

The rain-fall of the southern portion of these same States is from 64 inches at Mobile, to 60 inches in the western and central portion of Alabama and eastern Mississippi; while along the borders of the great Mississippi river the rain-fall is only from 48 to 56 inches for the year.

What we have said in relation to the climatic influences that prevail in Alabama, Mississippi and Arkansas, in their relations to pneumonia, we believe to apply to every southern State; the amount of mortality from pneumonia being in some sort an index of the extent to which malaria is evolved within their borders; and that the topography of a State and its malaria producing qualities, is of more influence on the mortality of pneumonia, than the characteristics of climate *per se*. We know that this question concerning the part that malaria plays in the development of pneumonia is not a new one, nor one on which the profession is united; the learned and laborious La Roche having written a large volume to prove that pneumonia and malarial fevers have nothing in common as to their origin. He has been followed by Flint, and others, who hold to the same opinion. It must be remembered, however, these writers have either had a very limited experience, or no experience at all in the treatment of those affections attributable to malaria. While we do not assert that pneumonia, as seen in this southern country, stands in the same direct relation to malaria that intermittents and remittents do, still we do believe that to cases occurring under such circumstances, where the patient has for a long time been under the influence of the baneful miasm, it imparts an element of fatality and gives to the case a gravity that it otherwise would not possess. For, besides the anæmia and damaged vital power that malaria entails upon its victim, it, in common with some other constitutional poisons, though it may lie dormant for an indefinite time, just so soon as the patient is menaced by some other malady it demonstrates its presence; in pneumonia, by prolonging the cold stage, and by its well known

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propensity to produce disturbance in the vascular system, and consequent visceral congestions, adds to the already congested lung an increased supply of blood, thereby augmenting effusion and increasing the consolidation.

It may be argued that the great variableness of temperature which characterizes the southern winters, and the rapidity of the changes from one extreme to the other, is sufficient to account for the larger number of deaths from pneumonia in that section. This we do not believe; for, while it may be the exciting cause of a large number of cases, we do not believe that it is to this alone that is to be attributed the greater mortality from pneumonia in the South; and this is well exemplified in the mortuary statistics of the State of Texas. For, while the death rate from pneumonia in Texas, east of the Colorado river, was 6.7 deaths from all causes, in Texas west of the Colorado, it was only one death to 15.2 from all causes. In eastern Texas it is a well known fact that malaria and malarious diseases are very prevalent; while in the dry western portion of the State they are not nearly so frequent. And while the whole of the State is subject to those sudden changes of temperature—Northers—to which nearly all the southern States are liable, and to which we have already alluded, the western half of the State is most markedly so; the temperature passing frequently, in an incredible short space of time, from one extreme to the other, the mercury frequently falling thirty or forty degrees in as many minutes; and yet we see the mortality from pneumonia was not half so great in this portion of the State as in the more eastern, where malaria was more rife.

The fatality that the malarious element impresses upon pneumonia in the South, has long been recognized by the best of our southern physicians and teachers. Dr. Leroy Anderson, in a paper published in the Transactions of the State Medical Association of Alabama for 1854, on "The Diseases of Sumter County," says of pneumonia in South Alabama, (more properly Central Alabama):

"The pneumonia of South Alabama is probably less severe

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than the same disease in more northern latitudes; and the *intermittent and remittent fevers* accompanying it are *more dangerous* than the pulmonary inflammation.

"The treatment should be directed chiefly against the malarious element of the disease. Quinine should be freely given for its anti-periodic effect, and mercury for its influence on the secretions, particularly those of the liver."

The same author, in an essay on "The Summer and Autumnal Fevers of South Alabama," says of pneumonia: "In our pneumonias, the remittent fever accompanying them is commonly the *real disease* to be combatted. This relieved, the pneumonic symptoms rapidly give way. Quinine is by far the most important remedy in their treatment. Moderate mercurials, antimonials, expectorants, &c., are very useful, but effect little in serious cases without quinine."

Dr. Leroy Anderson, cut off too early from his chosen field of labor and research, possessed in an eminent degree the confidence of his professional *confreres;* and his knowledge of the types of malarious diseases has perhaps never been equaled by any medical man in the State; certainly no man has ever given a more perfect portraiture of its protean manifestations.

Every physician who has practiced much in the malarious regions of Alabama will recognize Dr. Anderson's portrayal as genuine. Our much loved *confrere,* my former teacher, Dr. E. P. Gaines, is accustomed, in his lectures before the class in the Medical College of Alabama, as Professor of Clinical Medicine, to quote from Dr. Anderson on this point, enthusiastically sustaining his propositions.

In conclusion, while we do not wish to enter the argumentative arena, and endeavor to disprove the propositions advanced by Dr. La Roche and other eminent authorities, who maintain that pneumonia is never produced by malaria—though we cannot see why it should not be as competent to produce a congestion, followed by inflammation of the lungs, as of the stomach, liver, or intestinal tract, complications constantly occurring in the course of our ordinary remittents.

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But, however this question as to the causes producing pneumonia may be decided, we are firmly of the opinion, as before stated, that it is *malaria and malarious influences that give to* pneumonia its fatal tendencies in the South. And here we will not be against even Dr. La Roche, who concedes that a malarial element may complicate a pneumonia; we only add—to a sufficient extent, in many cases, to turn the tide against the patient and produce a fatal result.

PART II.

Health Resorts for Consumptives in the United States.

In the consideration and selection of localities suitable for the victims of chronic pulmonary complaints, of which consumption is the chief; while it is a general truism, that different cases require different climatic influences, as is so often said by way of preface in the treatment of this subject; yet there are certain elements that are essential to any climate claiming consideration in this connection. Probably the best climate that could be desired would be one that was comparatively warm and equable, and at the same time rather dry; for while a warm, moist climate would no doubt be better than a cold, damp one—just as we could see how Mobile might be a far better place for consumptives than Portland, Maine, or even Boston or New York city; yet on account of the great number of damp days and the large rain-fall at this place, we would not expect Mobile to escape a rather large mortality from this disease, and such we find to be the case; for if we examine the mortality tables prepared by Dr. G. A. Moses, formerly of this city, and appended to his report "On the Diseases of Mobile County," printed in the volume of the transactions of the State Medical Association for 1872, we find the number of deaths from consumption in Mobile, from the 1st of January to the 31st of December, 1871, was 227, one death to 5.2 from all causes; while, as we have seen, the death-rate throughout the State, by the census of 1870, was one death from consumption to 14.2 from all causes. In

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1873 the mortality from consumption in Mobile was not so great as that of 1871, for according to the weekly printed reports of the Registrar of Vital Statistics from January 1st, 1873, to January 1st, 1874, there were 135 deaths from consumption, to 1169 from all causes, or one to 8.6.

Along the Gulf coast of Alabama, we have a greater prevalence of cold land-breezes, alluded to by Blodgett, and to which he attributes the failure of certain tropical fruits, but we have nothing in the way of storms flowing from the sea to the land, that compare with the disagreeable blows experienced along the South Atlantic or Florida coast, they being a continuation of those storms centering along the western border of the Gulf Stream, and which have made Cape Hateras notorious. But it is not the winter season that is most trying even to the consumptive originating in this city, for the rain-fall along the Gulf coast from Pensacola to New Orleans is greater than any other part of the Union except the North Pacific coast, and a large proportion of this is crowded into the summer months. In the published report of the Chief Signal Officer at Washington for the year 1873, we find that for the preceding twelve months ending September 30, 1873, the rain-fall at Mobile was distributed as follows: For the spring months, 16.21 inches, summer 28.97, autumn 16.49, winter 11.01. The summer rain-fall is much greater than that of the other seasons, and the relatively large rain-fall for the spring and autumn was principally due to the amount precipitated in May—11.47 inches—the last of the spring months, and September—8.87—the first of the autumn months. With the first of May along the Gulf coast commences the warm weather and the larger rain precipitation, and closes about the first of October. And this is the most trying period to the consumptive, especially the more advanced cases, where the lung is breaking down and the expectoration is abundant, or where cavities have already been excavated in the lung tissue. The heat causing a more or less rarified condition of the atmosphere, lessens the amount of oxygen inhaled at each inspiration, and combined with moist-

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ure has a direct tendency to cause a general relaxation of tissue and augment the secretion from any pyogenic membrane, such as the lining of a vomica affords. Such we would expect to be the effect from *a priori* reasoning, and observation confirms it as a verity. There are numbers of individuals, residents of this city, who by proper care of their hygienic condition can pass the winter in Mobile with comparative comfort, with scarce any retrograde in their general health, though suffering from phthisis often of many years duration. With the advent of warm weather they immediately feel the grasp of their old enemy tightening on them. They begin to lose appetite, the hectic flush deepens, announcing the febrile annoyance by day, and the profuse sweats deplete by night, and in spite of judicious medication, the patient continues steadily to decline.* With the month of August the exhaustion, prostration and attendant mortality of the heated term seem to reach their acme, the mortality for the month of August from phthisis being greater than for any other month in the year, both in the tables prepared by Dr. Moses and those by the Registrar of Vital Statistics. It is also a notable fact that the rain-fall was greater for this month than any other of the twelve, as is shown by the meteorological record for both those years. Blodgett, in his Climatology of the United States, calls attention to this large rainfall common to the Gulf coast for the summer months, and in his hyetal chart of the mean precipitation for the three summer months, it is set down at 20 inches. The mean temperature for the month of August, 1873, whose relative mortality we have mentioned, was 80.20, just two degrees lower than the preceding month of July. The long, warm, moist summer season, then, is the most trying to the cases of consumption originating in this city; and in a similar manner, we have no doubt, it would impress the invalid coming from the regions farther north who might sojourn here during the

*Dr. Southgate, speaking of those cases originating in Florida, says: "In such, the rapid melting down of the lung in the warm months, it has been my painful duty to witness in more than a single instance."

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same period. But in this disease, as in every other, we must bear in mind the differences which the temperament and constitutional peculiarities of the individual may impress upon the disease. As we stated, there were persons in Mobile who are unable to withstand the heat of summer in this latitude, but who derive great benefit from a short stay in the more northern latitudes, as Minnesota, for three months, and when the stay is continuous, followed by permanent benefit and apparent cure, the improvement in their physical condition for the warm weather being such as to enable them with impunity to pass with safety through the long, rigorous winters of these latitudes. Just in the same ratio we see persons coming from the north with symptoms of phthisis more or less marked, who are so much benefitted by the mild and, in the main, delightful climate our winters afford, that they are enaabled without detriment to spend their summers here also, and by prolonged residence the inroads of the disease are permanently checked.

May there not be more truth than we imagine in the assertion of the late honored and lamented Dr. J. C. Nott, who used to say that a consumption originating in the South should seek a northern latitude, and *vice versa*. That strong and rising man of New York city, Prof. Alfred Loomis,* in relation to the treatment of bronchial catarrh in those predisposed to consumption, says: "If the individual lives among the mountains, let him go to the sea-side; if at the sea-side, let him go among the mountains," hinting at the same idea advanced by Dr. Nott.

The city of Mobile, in common with all places near the sea-shore, is fanned by alternate breezes from the Gulf and the land, as a consequence possesses that combination of land and sea air which, while very beneficial in certain cases, is not regarded with favor by some of the most experienced in these matters. While, then, we do not regard the city of Mobile as a suitable place for the sojourn of the consumptive during the period of the intensest heat of summer—say for

*Diseases of the Respiratory Organs, Heart and Kidneys, 1875.

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the months of June, July, August, and a part of September—there can be no doubt that for the comparatively rainless autumn months, the mild, equable, and, in the main, delightful winter and charming spring, it possesses such characteristics as entitle it to the careful attention of those wishing to flee from the harsh winters of the more northern latitudes. Social and gastronomic considerations are of the greatest importance in the selection of localities for the hygienic treatment of phthisis. Excellence in both these characteristics has long since been conceded to Mobile, and is a source of pride to all her citizens. The high tone of society, the hospitality and the frankness with which strangers are received are characteristics of her people; with a most excellent market, ranking second to none in the South, and in the matter of fish and oysters, the finest in the world; since the renovation of the Battle House, a hotel with all the modern improvements, an elevator, polite servants, an excellent table, and everything necessary to the comfort of the invalid.

Mobile is situated on the western bank of the Mobile river, and has nowhere in the corporate limits an elevation more than forty feet above the Gulf of Mexico. The elevation at the wharves along the river front above the Gulf is about 15 feet; from this point the altitude increases as we proceed westward till, at the distance of one mile and three-quarters, it attains an altitude of about forty feet. The city is thus well drained in the main business and residential portion.

To those who find, after trial, the air too heavy, and who wish a dryer and lighter atmosphere than the city affords, the pine hill regions to the north and west of Mobile are highly to be commended. Probably one of the best situated of these highlands is Citronelle, a village on the Mobile and Ohio Railroad, thirty miles north of Mobile; it certainly is the highest region anywhere in the neighborhood of Mobile, being more than three hundred feet above the level of the Gulf. The country here is rolling and hilly, interspersed with ravines. The highlands are covered with a growth of the Southern long-leaved pine *(pinus)*. The ravines, along

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which, in the majority of cases, a stream of sparkling water winds its way, are filled with a thick growth of magnolia bay, &c. That this is a locality suitable in an eminent degree for many cases of consumption, is a fact to my mind undoubted. Many advanced cases of consumption originating in this city, those long past the stage of curability, and who experience great depression in the atmosphere of the city even during the winter season, find the higher altitude of Citronelle and the pure air of the pine forests very soothing and agreeable to their sore and irritable lungs. The accommodations for the invalid are limited, and not of the best order. The best accommodations are those afforded by private families in the neighborhood, hence the number of good places and the number of sick that can be accommodated are comparatively few. As a location for the establishment of a sanitarium on a large scale for the accommodation and treatment of the victims of consumption, we think it possesses claims that should entitle it to the earnest consideration of those most interested, namely, the physicians treating such patients and the patients themselves. We think, also, in a utilitarian and business point of view, it would prove a great success and be a paying investment, for in addition to the favorable characteristics that we have already seen it possesses, it is directly on the line of a great railroad thoroughfare, in constant and speedy communication with the outside world, only about one hour's run from Mobile, with which place, beside the communication afforded by the through trains, it is connected by a special daily train. Marketing could therefore be done in Mobile, and the splendid fish and oyster market which the latter possesses could be as thoroughly utilized as in the city itself.

There are other places in the vicinity of Mobile that claim consideration in this connection, but none, perhaps, that presents so many advantages as Citronelle. We might mention Spring Hill, a delightfully situated village on the top of a hill or elevated plateau, one hundred and fifty feet above the region at its base, and one hundred and seventy above the city

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of Mobile. The village is well supplied with well-water of good quality, and commands a fine view of the city and bay of Mobile.

Mt. Vernon is another beautifully situated village in this pine region, on the line of the Alabama and Grand Trunk R. R., twenty-nine miles north of Mobile, and is the seat of the United States Arsenal.

As a health resort in the southern latitudes for the consumptive, Florida early attracted attention. As early as 1820-25, after the dreaded Seminole had been driven from his home in the everglades and forced to leave his hunting grounds forever, and the tide of white emigration began to flow in this direction, attention was divided between the warm semi-tropical climate of Florida and the islands of the West Indies. From 1835 to 1845 or '50, there was hardly any place within the limits of the United States recommended to phthisical patients but that of Florida; and at this time the Eastern or Gulf shore of the peninsula was the one most highly commended; Pensacola being considered a better locality for the consumptive than St. Augustine. From 1840 to 1850, a very large number of phthisical persons, in every stage of the disease, seeking that restoration to health which no climate could give to all, came to this region. Many of the more promising cases having rapidly gained health and strength here, coming as they did from the frozen regions of the north, induced others, and still more desperate cases, to avail themselves of its health-giving qualities, only, however, to be disappointed; the very large number of improper cases sent there only to find a grave, together with the very inadequate accommodations, had, even before the commencement of the late war, caused its popularity to wane, and some physicians to assert that the climate of Florida was suitable only for a minority of those cases occurring even at the north. Of course, during the war, all communication being cut off by the hostile attitude of the two sections of the Union, few, if any, came from the North for the benefit of their health. Not long after the war, however, invalids and tourists again sought

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health and pleasure in this delightful semi-tropical climate. Among the latter class of persons were numbers of the ubiquitous newspaper correspondents, a class of persons whom the striking incidents of the great civil strife had called into existence. These came to Florida in numbers, and by their letters filled all the newspapers at the North with their gorgeous descriptions of this most wonderful southern country. Among those who by their writings served to direct attention to the climatic advantages of Florida, its scenery, &c., there was one of more than ordinary ability as a writer, and to whom probably Florida owes more to-day, than to any other person, the very considerable immigration of northern people as permanent settlers, and the large number of persons who yearly resort thither for health or pleasure. I allude to Mrs. H. B. Stowe. Certain it is, that there are more invalids spending their winters in Florida, than at any other period of her history. Thousands flock there every winter, and numbers make investments and become permanent citizens.

Undoubtedly Florida is a most desirable and promising resort, especially for cases developed at the North, for the winter season. Medical men do not agree, however, as to what portion of the State possesses the most advantages, and should be more especially commended to the invalid. None, however, recommend the Gulf coast of the peninsula, which is in marked contrast to the former opinion of medical men on this subject. However, Wm. W. Moreland, M. D., in a paper read before the Massachusetts Medical Society, entitled "Health Resorts at the South," 1874, recommends, on the authority of Dr. George Hayward, the region on the Perdido river, about twenty miles from Pensacola, Florida, and which is the dividing line from Alabama. It is described as a dry, marly, pine region, eminently suited for the establishment of one of those Sanitaria, which he hopes to see established in the South at some time not far distant. In our opinion, the place above mentioned possesses no advantages in point of climate that the village of Citronelle does not possess; while the latter, situated on the line of a great railroad thorough-

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fare, is easy of access to the whole country. Besides, there are many days in succession when the weather is magnificent in the city of Mobile, and parties, wearied with the monotonies of the life at the Sanitarium, could come down to the city and spend some days with pleasure and benefit.

As we have stated previously, as a location for a Sanitarium, Citronelle is unrivalled.

But to return: The portion of Florida which now receives the largest number of invalids is the Atlantic sea-board and the St. John's river region. The towns and cities most frequented by invalids on the St. John's river, are Jacksonville, Hybernia, Magnolia, and Green Cove Springs, with Palatka and Enterprise further inland and to the south. St. Augustine, Fernandina, and the other places of resort on the Atlantic coast, do not seem to be as suitable resorts for the consumptive as those along the St. John's river, as is proven both by the experience of invalids, and the observation of physicians who have studied this question and recorded their experience. Dr. Moreland, in the paper already alluded to, says of St. Augustine: "Many go to St. Augustine, but, as our experience compells us to say, with far less advantage—sometimes with positive harm. The immediate proximity of the sea is the difficulty. However delightful to feel the crisp, fresh breeze coming in from the sparkling, sun-lit ocean, over which one gazes with such delight from the shores, down to whose margin the quiet old town has crept, and lazily dreams away its tropical existence, there is danger. We have observed marked aggravation of symptoms in bronchitic patients who had come from Jacksonville, or further, to St. Augustine. A few days only sufficed to show the necessity for an immediate return—a favorable result justifying the action."

C. W. Horsey, M. D., in his "Remarks on the Climate of Florida,"* in regard to this same region, says: "Fernandina and St. Augustine present the same features of climate met with on the sea-board of semi-tropical climates elsewhere.

*American Journal Med. Sci., April, 1874.

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The atmospheric conditions of both are identical, being invariably moist, especially at night and morning, and under the continued influence of the sea breeze and wind currents from the ocean. During the winter months all points on the coast are exposed to the frequently prevalent northerly storms, which last at times for days, and whose fierce and penetrating blasts are difficult to be borne, even by the hardy."

The question, then, naturally arises—what portion of Florida presents such conditions of climate as will prove most beneficial to the largest number of invalids who yearly resort thither?

Undoubtedly the interior towns along the St. John's river, and which we have already mentioned, receive the larger portion of the consumptives who visit the State.

There are several reasons to account for this. First, they are more accessible than any other part of the State, all of them being connected, either by railroad or water, with the outside world; in the second place, the scenery along this river is unsurpassed in beauty by any other portion of this State, so rich in the gorgeousness of its semi-tropical vegetation. As a consequence, to the mere tourist, to whom the question of climate is not a vital one, this part of the State is undoubtedly the most attractive; and as hotels and other accommodations naturally spring up where they are most in demand, and where the largest number of persons do congregate, we find the best accommodations along the St. John's river. As dietetics is a most important feature in the treatment of consumption, properly prepared and wholesome food is an important element in the consideration of this question. From all accounts, however, the *cuisine* of most of the hotels along the St. John's is not altogether satisfactory, though improving much of late.

The question then remains to be decided—is there any portion of Florida that possesses climatic advantages for the consumptive invalid over this St. John's river region, which, as we have seen, is in most cases to be preferred to the Atlantic coast of Florida?

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Dr. C. W. Horsey, in the paper to which we have already alluded, thinks the high and dry pine regions constituting the centre or water-shed of the peninsular is greatly to be preferred to any other portion of the State. In regard to this subject, he' says: "The section of country to which I especially desire to invite and direct attention, is the *central pine land* regions, of which the towns of Gainesville, Mecanopy, Osceola, and Brooksville, are the centres. Situated as these points and their surroundings are, upon the highest and dryest section of the State, sufficiently removed from either coast to be beyond the effects of the dampness, they appear to me to possess peculiar fitness to merit all the requirements of climate that are to be obtained." "Those who are unable to live in high altitudes, consequently, will find great benefit here; for the country being level, dry, and not too much elevated, the circulatory apparatus is not subjected to the great distubances induced by rarefied air. In cases of chronic broncho-pneumonia, attended with excessive expectoration, the immediate benefit derived is probably more marked than in any other."

The highest elevation in this central plateau is about 300 feet; from 150 to 200 feet, however, is the usual hight. This high pine region of Florida, embraced in the counties of Alachua, Marion, Sumter, Orange, and a part of Hernando, is quite a large scope of country. Though we have never had an opportunity of testing the effect of a stay in this region upon consumptives, we are disposed to agree with Dr. Horsey, that here is located the best region for the consumptive that Florida contains, if we take into consideration merely the climate *per se*. The means of transportation to and from this region is very imperfect, however, and the accommodations of course are not such as are met with at Jacksonville and other places along the St. John's river; but if the patients were fond of hunting and outdoor sports, and able to indulge to any extent in such, and form a party, and either camp in the forests or get some farm house, and have a cook of their own, it would seem to me a most excellent arrangement;

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plenty of butter, eggs, milk and poultry could be had from the neighboring farms, besides the game from the forests. Of course, both physician and patient should weigh the matter well before the latter becomes one of such a party as that we have mentioned. Most undoubtedly it would, in properly selected cases, be productive of the best results.

We believe that this part of Florida under discussion possesses a better climate than either the pine lands of Georgia or South Carolina, possessing a climate milder, and where the winter variations of temperature are not nearly so marked. It even possesses some advantages over the pine lands of South Alabama, as a residence for the entire year, there being in the twelve months nearly eighteen inches more rain at Citronelle, Alabama, than at Gainesville, Florida. The mean *winter* precipitation, however, at the two places is about the same.

Aiken, South Carolina, situated among the hills and dry pine barrens of Barnwell District, 120 miles from the sea, and 600 feet above the sea level, possesses a climate very much like that attributed to the South of France, according to Dr. Simmons*—"characterised by dryness, moderate range of temperature, comparatively free from extremes of variation, a mean temperature of 61.69," Dr. Moreland says of the climate of Aiken. Our own impression of the climate of Aiken and its vicinity is, that many consumptive cases, where cough is accompanied by profuse expectoration, would be benefitted by the dry, somewhat bracing air. "The contrary would be likely to prove true of cases of irritative bronchitis, with dry cough, or with but little cough, and only slight secretion from the bronchial mucous membrane." Continuing, he says: "Rather injurious effects of the climate in these cases came under our observation—the throat becomes dryer and more irritable, and the transpiration from the skin nearly suppressed; whereas, in Florida perspiration was very free, and the softer, more humid atmosphere soothed the irritated lining of the air passages."

*Climate in its Relation to Consumption, Amer. Jour. January, 1872.

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This section of country is no doubt eminently suited for the establisment of a Sanitarium. Dr. W. H. Geddings, son of Prof. Ely Geddings of Charleston, did have such an establishment here—"The Pines,"—and we suppose it is still in existence. Dr. Moreland, in the paper we have been quoting, recommends it as well conducted.

Western Texas has for a long time attracted attention as a resort for consumptives. Some of the best physicians have been accustomed to send such of their patients as were suffering with bronchial catarrh and profuse expectoration to the dry plains of western Texas, and when the patient had a taste for field sports, and sufficient vigor to hunt and camp upon the plains, continually moving from one place to another, it has in many cases been attended with marked benefit.

San Antonio has been considered a good place of resort for the consumptive. The mean temperature of San Antonio is 68 deg., according to Prof. Henry, of the Smithsonian Institute, and 70 deg., according to Blodgett; is about 1,500 feet above the sea-level, with a rain-fall, according to Prof. Henry, of 32 inches. According to the observations of Dr. F. Pettersin, city physician, covering a period of six years, the mean rain-fall is 36.90 for the year; for the year 1873 the rain-fall of the three winter months amounted to only 1.48 inches; Blodgett places the mean at five inches for the same period; according to the observations of Dr. Pettersin, the mean annual temperature for six years was 68.85, for the winter 52.94.

The tables of mortality, on the very ingeniously constructed chart accompanying the weather tables, show a mortality for the year 1873 of 323, in a population of about 16,000. From the above number of deaths, the Doctor deducts 56 as (stranger-invalids). On my addressing a letter to him asking what these invalids were suffering from, and from whence they had come, also his opinion of San Antonio as a health resort, I received the following letter:

"OFFICE OF CITY PHYSICIAN,
"SAN ANTONIO, Tex., Sept. 6, 1874.

"*Dr. W. D. Bizzell, Mobile, Ala.:*

"DEAR SIR—Yours of the 31st ultimo received. In regard

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to the 56 strangers (invalids) mentioned on my chart, 24 died from phthisis pulmonalis; 16 of them were from Mexico; most of them had only been in the city from a few days to a few months. The remaining eight were from other States in the Union, who came to San Antonio when in the last stages of consumption. The remaining 32 strangers were mostly old broken-down Mexicans of the poorer class. In regard to the question of a health resort for consumptives, San Antonio is not a very good place, being situated too low, and very dusty (limestone); but a few miles above San Antonio, say from 15 to 30 miles, in the mountains (Leon Springs or Borene), being an excellent place for consumptives. I do not think there is any spot in the Union excelling it very much. Thousands of consumptives go there from every part of the Union, Borene being over 1100 feet above the Gulf, with good drinking water and a very pure air.

"The rain-fall is generally less during the winter months, say January and February in particular.

"Yours truly,

"DR. FRED. PETTERSIN."

We believe that for certain cases the high and dry air of Western Texas would prove very beneficial, especially the region mentioned by Dr. Pettersin; in cases of uncured pneumonia, especially if they be complicated with bad digestion, as they too frequently are, the water flowing from these limestone hills might exert a favorable influence, and are not to be overlooked. The gravest and most serious objection to this part of the Union as a health resort is the rapid and great changes of temperature that are liable to occur at almost any time. The northers or cold blows from the north that we have seen were common to most of the Southern States for the winter, are met with here, having an intensity and fierceness unknown elsewhere in the South. And the invalid must always go prepared to increase the amount of his clothing and in other ways protect himself from the intense cold sometimes developed. It cannot be denied that this characteristic in the climate of Texas is a very serious disad-

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vantage, and one not to be lightly overlooked in determining where we shall send our consumptives.

Thus far in the discussion of this subject—Health Resorts—we have only considered those located in the South, and more especially suited as resorts during the winter season for northern invalids. We come now to consider such localities which, while not altogether unsuited as resorts for consumptives originating at the North, are more especially suited for the consumptions originating at the South, and for the summer season.

Among these latter, one that has attracted considerable attention is Minnesota, in the great Northwest, of which region St. Paul is nearly the centre.

Minnesota is placed, as we at once perceive, far above the 38th parallel, regions to the north of which we have already seen possess the greater mortality from phthisis in this country. Situated, as it were, almost in the very centre of the continent of North America, and in the same latitude as the State of Maine, yet with a death-rate from phthisis much smaller than the latter, the proportion being as one in 7.7 to 3.9 from all causes, yet still being nearly twice that of Alabama, 14.2. The climate of Minnesota makes up in dryness what it lacks in warmth, the cool, dry summers being peculiarly grateful to many cases of consumption originating in the South. The annual rain-fall in the neighborhood of St. Paul is only about 28 inches, with a mean temperature of 42° in the same region, and with an elevation above the sea-level of 1500 to 2000 feet outside of the valley of the Mississippi, which takes its origin in this State and flows directly through it.

As a health resort, Minnesota began to attract attention just before the commencement of the late war, when the tide of immigration had set in this direction. During the war, when Florida no longer lay open to the Northern invalid, the physicians began to send some of such patients to Minnesota, but it was not until two years after the close of the war that it began to attract attention at the South, and by the year 1870 Minnesota had a reputation as a health resort greater,

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and attracted more attention than at the present time. The reason for this partial revolution in sentiment and opinion, on the part of the profession and the public, is not due to any climatological changes that have taken place, nor indeed, as we believe, that the climate has shown itself unsuited to properly selected cases that have been sent here. We rather think it due, as we have intimated in regard to Florida, to the large number of improper and hopeless cases that have been sent here with the vain hope that they will improve. To send a patient here suffering from bronchial irritation, with dry cough and tendency to the tubercular development, would only aggravate the trouble and fix the disease more firmly upon him. It is also no doubt a great mistake to send those cases of uncured pneumonia to this region from the North, as such cases recover almost magically in the warm, mild air of Florida; while for the consumptive from the South, who only begins to lose ground at home with the advent of warm weather, Minnesota is a most promising resort, especially in such cases where the expectoration is considerable and night sweats distressing. The claims of Minnesota as a health resort having been called in question, the "State Board of Health" issued circulars containing a series of tabulated questions calculated to bring out all the facts in the case. These circulars were sent out in 1874, directed to every medical man in the State. The report of the Board, if it has been published, we have not yet seen, though it must be very interesting.

Almost every physician in the South, if he has not sent patients of his own to Minnesota, has seen the benefits accruing to those of others that have gone there for the summer, and a permanent residence seems to be just what is needed in certain cases to stay indefinitely the inroads of the disease, as the record of numerous cases from this section will show.

However the claims of Minnesota may be decided by her State Board of Health and their recent researches, we have the opinion of the best of her physicians on this question re-

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corded in the volume of Transactions of the State Medical Association of Minnesota for 1870.

First, and bearing on the comparatively large mortality from phthisis in this State, Dr. Blood says: "Not two per cent. originated here." Dr. Galoway—"I think about one per cent. may be produced here." Dr. Mayo—"I cannot say in what proportion; very small."

As to the season of the year most suitable to resort thither, they are not so unanimous in opinion; all, however, are agreed that the change can be made with benefit from New England at any time, which is no doubt true in the main, though for invalids from this section (New England) we do not consider Minnesota as the best climate in winter, even for the minority of cases. From the South, the majority are agreed that the months of May or June are the best for invalids to make the change, an opinion we coincide in fully. Some, however, advise that the patient make the change even in mid-winter, so far South as New Orleans—bad advice we think.

Some of these in attendance at this meeting of the Association were persons who, on coming to Minnesota, were suffering from phthisis, and gave their testimony as to the effect produced by the climate upon their own persons, one of whom, Dr. Murphy, says: "I came here twenty years ago, and I think I may say that I am a living example, and a striking one, of the advantages to be derived from the climate of Minnesota in cases of pulmonary diseases. At the time of my coming here I was a very light weight; I, in fact, did not exceed 136 pounds; now my weight exceeds 226 pounds. At the time I came decided symptoms of pulmonary disease had declared itself in my case; but I found an immediate benefit in the climate of Minnesota, and at the present time I do not believe (so far as my lungs are concerned) there is a healthier man in the State. I have known persons to come here even in the advanced stages of the disease, and who made the most astonishingly rapid recovery. They came in despair, but on becoming better they returned to

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their homes, which they had no sooner done than the disease again developed itself."

Dr. Murphy says, that in many of these cases apparent or real cure would have followed a prolonged or permanent residence. We agree to the general truthfulness of the aphorism, that when a person finds he is in a climate suited perfectly, or nearly so, to his individual case, he ought to locate there and stay the balance of his life-time.

Dr. Murphy further says: "I have known business men to come here apparently doomed, and become so healthy and strong as to present no evidence of the disease; and they went back to Memphis and other places, *but they never came back here*,"—intimating that they soon died.

There are, however, many persons who, by spending their summers in the high and dry region of Minnesota, if it prove suitable to their conditions, can, with almost apparent impunity, attend to their daily avocations and spend their winters in Mobile; of course always keeping in mind, and living within the bounds, of a restricted vitality. We think, however, in many cases it is little less than suicidal for a person, after he is in a fair way to improve, if not to shake off the grasp of the disease entirely, before the good work is completed to again return to his old haunts and habits. If he can not remain permanently, he ought to stay at least twelve months after all signs of his old enemy have disappeared. There are localities that we think would be preferable to Minnesota even as a permanent residence for consumptives, originating as far South as Mobile, as we shall see further on.

In a report on the "Climatology and Diseases of Minnesota," by a committee appointed at the previous meeting of the State Medical Association, under the head of Phthisis, they say: "In almost every instance the profession agree in regard to the beneficial effect of climate and residence here in the incipient stage of this disease. In the second stage, or softening and expectoration, there is more difference of opinion; a few advise coming here at any stage, others at an early period in the development of the disease, while a large number

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do not recommend a residence here, unless there are some peculiarities about the case which would favor such a course.

"A few qualify the above statement, in that the patients should be marked by debility, anæmia, deranged digestion, and faulty assimilation from other cause; and also an absence of congestive tendency in the system; the arguments being, that our climate benefits phthisis only as it favors the process of nutrition.

"The per cent. of those benefitted in the second stage by residence is estimated by some as high as 80 per cent.; by others much lower; while in other experiences it has been very small, with the disease hastened in those not benefitted."

The committee complain of the meagerness of the details furnished by the various physicians of the State. But from a number of physicians, representing in the aggregate 30,000 of the citizens of Minnesota within the purview of their observation, they report as dying from phthisis in Minnesota, without predisposition, seven or eight; with predisposition, only 27. The period of observation on the part of the physicians responding to the call of the committee, ranges from 13 to 20 years, and shows a most remarkable immunity to the development of this disease in Minnesota.

In consequence of the cool, dry atmosphere of Minnesota for the summer season, it has proven, in properly selected cases, a most admirable resort for those cases of consumption and bronchial catarrh originating in the South, accompanied by profuse expectoration and rapid wasting of strength on the advent of the heated term; and though its reputation in this regard may be clouded for a season, by the unfavorable termination of improper or hopeless cases, we confidently believe that in the future it will be still recommended by the discriminating southern physician.

Colorado is another portion of the Union that is rapidly growing in favor as a health resort for consumptives and asthmatics—especially the latter. The Territory of Colorado is situated immediately at the foot and along the eastern slope of the Rocky Mountains, and is crossed by the 40th parallel

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of latitude, the major part of the State lying south of it, or at least that portion which has attained the greatest reputation as a health resort.

The mean annual temperature of Denver City, which is situated in this alleged health-giving region of the Territory, is 44 deg., according to Prof. Henry, and with a rain-fall, according to the same authority, of 12 inches per annum, at Denver, and 16 further up the mountain slope. The altitude above the sea level at Denver City is five thousand two hundred feet. The characteristics, therefore, of this climate are great dryness, purity and elasticity of the atmosphere, with, of course, a diminished amount of oxygen in a given bulk of air, in consequence of the great altitude. The physiological effect on a person entering such an atmosphere, is to increase the number of respirations to the minute, and accelerate the pulse; an effect that in advanced cases of heart troubles—such as mitral insufficiency, or dilated, weak or fatty heart—might prove disastrous, or even fatal. The same might be said of those cases of phthisis where a very considerable portion of the lung-tissue had been destroyed, or functionally compromised by the ravages of the disease, and just enough lung-tissue was left, for the patient, by a slight acceleration of the rapidity of the respiratory function, to breathe in comfort at ordinary altitudes. Such patients, on coming into an atmosphere having the altitude of Denver, pant and gasp for breath, and feel as if they could not endure it for an hour. I have known several persons who were of the class mentioned, and who, after arrival, found it necessary to their comfort, and even existence, to seek as soon as possible a lower level. These same persons had gone from this State, to the moderately high region of Minnesota, without any inconvenience.

Dr. Gehring, of Denver City, in a paper read before the Territorial Medical Society, October, 1873, gives a graphic description of the climate and its advantages, from which we quote. Among the characteristics pertaining to it, are, he says: "The *mild climate*, as compared with other parts of the

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United States on the same degree of latitude; the extreme temperature of the States being met with here only exceptionally. The summers in Colorado are generally mild and cool, especially the nights, which enable the invalid to obtain always the rest so much needed for the restoration of his health. Our winters can not be surpassed for beauty and mildness by that of any country of the same parallel.

"The almost constant *dryness of the atmosphere*, dependent on the sparsity of the rains, the porous soil, and dry winds."

It should be not left unsaid, that there is almost complete absence of stagnant water here, which explains to a great degree the exceeding dryness of the air. All this encourages outdoor exercise, both winter and summer. The dryness of the atmosphere encourages the action of the skin, and yet so rapid is the evaporation that the perspiration is quite imperceptible, thereby exposing the patient less to the danger of taking cold than in moist climates. On account of the rarity of the atmosphere, in consequence of the *high altitude*, a larger bulk of air is needed to oxidize the blood. Either the chest must be forced to greater distension, or the breathing must be much accelerated.

Either of these processes necessarily causes an increased destruction of lung-tissue, &c., and the power of digestion, &c., being equal to the task, also accelerated repair. The *sun light* is seldom obscured by clouds and fogs, so that its accompanying warmth and invigorating power is always to be counted on—principles so necessary to healthy organic life.

"If other inducements were needed for outdoor exercise, we have the magnificent scenery of the mountains, to withdraw the mind from an undue consideration of self, and to fill it with healthy enjoyment, instead of brooding on disease, thereby leaving the nervous system undisturbed in its workings.

"All these advantages contribute to increased exercise, and therefore increased destruction of organic tissue; in which very destruction consists the invigorating properties of this country, for thereby repair becomes at once and always nec-

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essary, while the outdoor life and exercise in pure air stimulates the digestive apparatus to answer to the increased demand. If the latent functional force be there, we have accomplished our end; old tissues will be de troyed with greater speed, to be replaced by younger and more vigorous material; that which is bad, in short, replaced by that which is good—physiological products are substituted for pathological.

"But let it be remembered that the one '*sine qua non*' by which all this is to be accomplished, is a sufficient degree of digestive force. With this, let the patient be sent to Colorado (if his disease is not too far advanced); *without* it, let him be advised to remain at home." "Our Territory is like a wild steed. If you can tackle him, he will carry you out of your difficulties; if you can not, he will break your neck." This point we consider well taken, for, as we before stated, we have known persons with advanced phthisis go to Denver and be scarce able to spend a single day, and to whom a continuous stay would have been most disastrous.

These high regions in and around Denver City have acquired a very considerable reputation as a resort for asthmatics. Dr. W. F. McClelland, President of the Territorial Medical Society, in his annual address for 1873, speaks most flatteringly of its claims in this particular; and though it is a little irrelevant to the subject under discussion, in view of the distressing character of the malady, we will devote a small space here to this subject.

Dr. McClelland says: "I look upon Colorado as the house of refuge for certain invalids, particularly those suffering from asthma." Dr. W. R. Whitehead, of Denver, Colorado, in the American Journal of Medical Science for 1873, "On the Climatic Influences of Colorado,"—which, however, is mainly devoted to a history of the cases composing, and comments on, a Convention of Asthmatics that had assembled in Denver a short time previous. He gives a sketch of twelve of these asthmatic laymen, on whom he was enabled to make a physical examination, all of whom were from some one of the Eastern States, and in all the disease had existed from six to

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twenty years. All were greatly benefitted, or entirely relieved, after a more or less prolonged stay in Denver. Of course the cases referred to were only a small proportion of those composing the convention referred to. Commenting on these cases, Dr. Whitehead says: "I should not omit to mention that asthmatics with valvular disease of the heart, or with advanced phthisis, will not be benefitted by a residence in the high altitudes of Colorado; indeed, the best place for patients with advanced phthisis, is home." Continuing, Dr. W. says: "It will be observed, from some of the cases that I have reported, that relief from the asthmatic paroxysms was obtained immediately on reaching a sufficient altitude in Colorado; as, for example, the altitude of Denver, which is five thousand two hundred feet above the sea-level. In other cases, a residence of several months, or a longer time, was required."

In one of these cases, No. 8 of the series, the patient only obtained entire relief at an elevation of eight thousand, four hundred and fifty feet, the altitude of Georgetown, where she resided. She would suffer from occasional attacks at Denver, but never during a two years residence in the higher altitude of Georgetown.

There are many other towns in Colorado that the invalid could stop in with benefit besides Denver. Among the principal of which is Colorado Springs, on the Denver and Rio Grande Railroad, seventy-six miles south of Denver, with an altitude several hundred feet higher than the latter, being 5,975 feet above the level of the sea. There have lately been built here hotels and bath houses, to accommodate those who may seek to avail themselves of the pure mountain air and the valuable mineral waters that there abound. Pueblo, still further south, is a very desirable place in some respects. In grandeur and sublimity of scenery, the canons, parks, and mountains of Colorado are unsurpassed in this country, and we are satisfied that as a health resort, for consumption originating in the South, it would in many cases prove a most excellent place of summer resort.

Arizona Territory undoubtedly possesses strong claims for

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consideration as a health resort for consumptives. The Territory of Arizona is situated just to the west of New Mexico, between the latter and the southern portion of the State of California, which it very much resembles in its physical aspect of mountains, valleys and plains, abruptly associated and intermingled; and, as a consequence, possesses the same marked local variations in temperature and atmospheric pressure which distinguish Southern California. It is even more arid than the latter, having only a rain-fall of from five to six inches for the year. Almost every condition of atmospheric pressure can be found here, from that of the deep valleys, not far above tide-level, to lofty valleys and mountain peaks 10,000 feet high.

In the December number of the Virginia Medical Monthly, 1874, there is a very interesting paper, "Arizona as a Health Resort for Consumptives," by G. B. McPhail, M. D., Post Surgeon U. S. A. He says he believes the climate of Arizona, including Southern California and New Mexico; "the finest in the United States for pulmonary diseases." And he further says: "Last November I arrived at Youma—formerly called Arizona City—thence proceeded to Tucson, where I spent a week; from thence proceeded to Camp Grant, a four company military post, where I spent the winter. I was out in the mountains with a large scouting party during most of the spring, and since May have been on duty here (Camp Apache), a three company military post, as Post Surgeon. In addition to the troops, I have been thrown with many native Mexicans and more than twenty-five hundred native Apache Indians, on the San Carlos and White Mountain Reservations; and during all this period I have not seen a case of consumption among the natives, and no case in the white population that had not been arrested, many of which were apparently cured.

"I have not seen a case of pneumonia or other serious disease of the respiratory organs. I have met soldiers and officers who were suffering from almost every form of lung diseases on their arrival in the Territory; phthisis in its differ-

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ent forms—in several far advanced bronchitis, asthma, impaired function from old pneumonias, pleurisies, &c., and in every case marked improvement has followed after a short residence here. Many cases seem to be cured, others benefitted and held in abeyance." The mean annual rain-fall throughout most of the Territory of Arizona is from five to six inches. The temperature varies with the elevation above the sea-level. The mean winter temperature of Youma, only a few feet above tide-level, is about 55 deg.; rain-fall, five inches per annum. Tucson, the capital of the Territory, a town of some 3,500 inhabitants, according to Dr. McPhail, for eight months of the year affords a most excellent climate; has an elevation of 2000 feet above the sea; snow seldom falls on the plain, though the mountain tops are occasionally covered; it is colder in winter than Youma, and not so warm in summer; mean annual temperature 62 to 65 deg. F. Of Camp Grant, where he spent the winter, Surgeon McPhail says:

"Camp Grant is about one hundred miles north-east of Tucson, and located at an altitude of 4000 feet, along the south-east bank of the Graham mountains, which tower far above; while a beautiful plain extends for many miles in the distance, bounded by a parallel range, and forming a valley over a hundred miles long by fifteen in width. As most of the storms come from the east, it is in a measure sheltered from their severity. The thermometer occasionally falls 22 deg., and during the winter and early spring the mountain tops are covered with snow, but rarely an inch falls upon the valley. The temperature rarely exceeds 100 deg. F. in the summer, and the nights are cool."

Of Camp Apache he says:

"Camp Apache is located in the Sierra Blanco mountains, latitude 34 deg., longitude 109 deg. 45 min., altitude 5600 feet, constructed on a misa, in a beautiful valley, almost entirely surrounded by mountains. The White river, a silvery stream of pure water, courses through this valley, which is clothed with a luxuriant verdant growth, while the mountain-

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sides are covered with live oak, cedar, pine and fir trees. The winters here are sometimes harsh, the thermometer sometimes registering as low as 6 deg., with considerable rain and snow; yet when the days are clear the temperature is mild and bracing. But from May to December the climate is superb, the temperature rarely reaching 100 deg. at noon, and generally falling to 70 deg. at night, causing a blanket to be comfortable and refreshing sleep certain. This summer (1874) the snow did not disappear from the mountain tops till the middle of June, and the so-called rainy season commenced about the first of July and lasted until September first. During this period frequent showers, with vivid lightning, occur at night, leaving the day bright, with a delightful atmosphere."

We see, then, as Dr. McPhail remarks, that "any temperature desired may be obtained within a comparatively short distance, according to latitude and altitude."

The climate of Arizona, in common with the States occupying the slopes of the great Rocky Mountain chain, in this latitude, is a dry one, and in a great degree possesses an immunity from those sudden changes of temperature so injurious to the phthisical patient in the Eastern States; the cold of winter is less intense and the heat of summer more endurable, and by proper selection, after once reaching the Territory, within small distances we find localities suited for winter and summer resort; for, as Surgeon McPhail says, "The numerous little valleys and secluded canons afford protection from the sudden storms of winter, while the more elevated positions afford a retreat from the summer heat and malarial poison,"—a patient residing during the winter say at Youma, and for the summer at Camp Apache.

Dr. Geo. S. Rose, Ass't Surgeon U. S. A., stationed at Ft. Youma, says:

"In an extensive practice in this vicinity for two years, I have met with but two cases of the disease (consumption). Two of them I found amongst the enlisted men, and one amongst the native Mexican population. The two former

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are now on duty, nearly well, and the latter succumbed, owing, I am satisfied, to want of proper hygienic care and attention, and also to the disease being complicated with hereditary syphilis. I have not seen a single case among the native Indians in this vicinity, and with the exception of the one above alluded to, not a case among the native Mexican population."

He further says: "My own conviction is that the belt of country lying between the 32d deg. and 35th deg., and extending from the Pacific coast to the valley of the Rio Grande, is the best adapted of any other portion of the continent for the treatment of tubercular phthisis, and that the completion of the projected Texas Pacific Railroad will make it THE resort for this class of invalids."

New Mexico, lying just to the east of Arizona, possesses much of the characteristics in the way of climate that distinguish the latter, being mild, dry and equable. The mean annual rain-fall in the valley of the Rio Grande is eight inches, gradually increasing as we approach the mountains on either hand till, far up among the latter, there is a rainfall of 16 inches for the year, and in a portion of the southeastern part of the Territory the rain precipitation amounts to 24 inches per annum. As we remarked of the Territory of Arizona, the physical aspect of New Mexico is that of rapid transition, and great diversity of elevation, contaiuing within its border deep valleys, gorges and canons, associated with mountains and elevated and more or less arid plains. Of course in such a region the local variations in temperature, &c., show great differences, even in places very near each other. New Mexico has in some sort of vague way, for a long time, been spoken of as promising much to phthisical invalids, and in newspapers and among laymen it is not uncommon to hear it mentioned in this connection approvingly, but I have been able to find very little that was definite in regard to it. No doubt its inaccessibility and the comparatively few invalids who could undertake so toilsome a journey, has deterred medical men from recommending it before

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this. In my opinion, to a man who is willing to forego a great deal, spend years, if necessary, in the effort to restore his respiratory organs to a sound condition, there is no place that I know of so promising as New Mexico, especially the Rio Grand valley. It is high above, but not too high, the sea-level, possesses a dry, balmy and invigorating atmosphere, and the rich soil, under beneficent irrigation, teems with the finest fruit that rewards the toil of the husbandman. Finding so little on record as to this climate at the hands of medical men, I addressed several letters to different parts of the State, but received in reply only one letter, from Dr. O. H. Woodworth, which is so interesting and to the point, I shall insert it entire. La Mesilla, the town in which the doctor resides, is situated in the Rio Grand valley, about fifty miles above the old Mexican town of El Paso, so famed for its grapes, and is 4000 feet above the sea-level. As to the productions of La Mesilla and its claims as a health resort for consumptives, we shall leave to Dr. Woodworth in the letter referred to, and which follows:

"LA MESILLA, NEW MEXICO,
"September 24, 1874.

"*Dr. W. D. Bizzell:*

"Dear Sir—Yours of the 9th instant is received, and in reply I would state, that I have never known a case of tuberculous consumption to originate in this part of the country; and such a thing is unknown to the natives here. I honestly believe that any patient with incipient tuberculosis would be entirely cured, or the tubercular development arrested and rendered latent and inert, by a permanent residence in this section of New Mexico. I have known many consumptives to come here for the benefit of their health, and *all* were benefitted; some temporarily, *some permanently*. Those who were benefitted temporarily only, were in the last stages of the disease when they came, and of course were beyond all climatic or medical aid. Still, their lives were prolonged much more than could have been possible in any section with

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which I am acquainted. I have known patients to come here with apparently well developed tubercles, undergoing induration—others with vomicæ—and regain health, strength, and flesh.

"Our climate is very dry, mild, and equable; no dew falls; the rain-fall is only about eight inches yearly. The elevation of the Rio Grande valley at this place is about 4,000 feet above the sea-level. Our winters are very mild and pleasant; of course, we have a few cold snaps occasionally, but not disagreeably so. Snow seldom falls in the Rio Grande valley, which is bordered by mountains; and when it does, it melts as fast as it falls, never remaining on the ground more than an hour or so. Our summers are cool and pleasant; the sultry, suffocating "heated terms" of the States are unknown. A person can sleep out of doors (owing to the absence of dew) the year round, except in rainy weather, of which we have comparatively very little. We have fine fruits, melons, &c., including the famed "El Paso Grapes," probably, in this climate, the finest in the world.

"The foregoing, I believe, Doctor, answers your questions as well as it is possible to do so in a short letter. You may possibly think the picture overdrawn, but I assure you that it is not. This Territory, in my opinion, is, as a health resort for consumptives, far superior to famed Italy, and its cloudless skies, but malarious marshes.

"Should you desire to know anything more concerning New Mexico, I will take pleasure in answering you. As to me, it is a "labor of love" to speak or write of our health-giving climate.

"Respectfully yours,

"O. H. WOODWORTH, M. D."

We have no doubt but that the valley of the Rio Grande surpasses, in attractiveness and health-giving qualities, that of the Colorado, in which is situated the town of Youma, of which we have already spoken; and the only reason why it has not long ago been thronged with consumptive invalids, is

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the want of attention on the part of physicians to its claims, and its inaccessibility. The long, fatiguing, and even dangerous journey necessary to reach it, deterred physicians from recommending, and patients from attempting to avail themselves of the advantages that might attend a residence in this valley. But with the completion of the Southern Pacific Railroad, projected to pass through this Rio Grande valley, and which, in the growth and development of the country, will soon be a work of prime necessity, and is bound to be completed at a period not very far in the future, this will be one of the chief resorts recommended to the victims of tubercular consumption.

The southern portion of the State of California has, in the last few years, acquired very great repute as a health resort; and it is predicted by some that it will in the future be the great sanitarium of the continent in the treatment of pulmonary diseases. Thousands now resort thither, during the winter season, from the eastern States of the Union; and many to make it their permanent residence. Santa Barbara, San Bernardino, Los Angelos, San Diego, and San Jose, are the points to which most invalids resort.

Dr. Lewis Rogers,* of Louisville, Ky., has lately spent some time in California, and devoted considerable time and attention to the study of the climatic characteristics that distinguish this portion of the State. "San Diego," he says, "is distinguished for its warm and remarkably equable temperature, the diurnal variations being slight, and the changes due to the seasons so inconsiderable as to be harmless. Its proximity to the sea renders the air salt and somewhat humid, unless the wind blows from the inland, and in the winter season cold fogs are sometimes troublesome for a portion of the day." Many of the physicians of San Francisco, according to Dr. Rogers, prefer San Diego to any other place as a winter residence for a certain class of patients. But from what he could learn, it is deficient in variety and abundance of the best kinds of food.

*American Practitioner, May, 1874.

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Santa Barbara, according to the same authority, "enjoys a like equable temperature, somewhat colder than that of San Diego, with a salt and somewhat humid air, and occasional but less frequent and warmer fogs. The weather is sometimes too warm and relaxing for consumptive patients."

The same conditions of climate prevail at Los Angelos as the foregoing, save that it has somewhat less of the fogs and dampness incidental to places nearer the sea-coast.

San Bernardino is in all respects like that of San Diego and Santa Barbara, save that being very considerably more remote from the sea-shore, "its air is more dry, free from sea impregnation, and fogs do not so frequently occur."

"Stockton and Vesalia are inland towns, with a mild, dry and equable air, very agreeable to many invalids to whom the sea air is offensive." The mean annual temperature of Los Angelos and San Diego, according to Prof. Henry, is 60 deg. F.; that of San Bernardino is somewhat less, 56 deg. The mean annual rain-fall at San Diego is only about 8 inches for the year, and that of Los Angelos and San Bernardino is about 12 inches. These places, then, would at first sight seem to be most peculiarly fitted for the sojourn of those afflicted with tubercles.

From the reputation these places have acquired in this connection in the States east of the Rocky Mountains, Rogers says he "was surprised to find the resident physicians at San Francisco not at all enthusiastic on the subject." On questioning them as to whether or not they ever sent any of their patients to Southern California, San Francisco being recognized as a bad locality for consumptives, the reply was, that "they did send some of their patients to Southern California for a short while in the winter season;" at other times they greatly preferred the resorts among the Sierra Nevada Mountains. But if we study the characteristics of this climate closely, we very readily see that they are right; for though, as we have seen, the annual rain-fall amounts to only twelve inches, every drop of which usually falls between the first of November and the first of March, and though the tempera-

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ture is everything that could be desired, the mean for the winter being 53 deg. F., and for the summer 68 deg., the amount of moisture suspended in the atmosphere *bears no proportion* to the amount of rain-fall. And though it is usual to speak of this part of California as possessing a dry atmosphere, on account of the long summers destitute of rain, in reality it is a damp climate—as damp as Jacksonville, Florida—and for the winter season does not possess a climate so desirable as the latter affords; and even during the summer, when there has not been a drop of rain in months, and the whole of the earth's surface is dry and parched, the air is, for the major part of the time, charged with moisture, almost to the point of saturation, notwithstanding the fact that clouds of dust fill the air almost, sometimes, to the point of suffocation. The climate of this portion of California possesses much of the characteristics of sea-coast elsewhere, so far as the impression made on consumptives is concerned; they, of course, being favorably impressed by the very equable condition of temperature to which we have already called attention.

The physicians of California, according to Dr. Rogers, "claim for California the position of every variety of climate that has been found useful in the various forms and stages of consumption—a variety which admits of a ready and very perfect adaptation to individual peculiarities and requirements. A very few hours travel will place a patient in whatever climate he may desire—warm or cold, dry or moist, on the mountains or the plains, inland or on the sea-shore, in sheltered valley or breezy uplands." This claim is very well put; and, as we mentioned when treating of the territories of New Mexico and Arizona, this mixed character in the topography and consequent climatology was one great advantage that pertained to this section of the Union, enabling the patient to select, after actual trial, just that locality that seems to be most agreeable to him as regards altitude, temperature, &c.

We do not mean, in the foregoing remarks as to the humidity of the air surrounding Los Angelos, San Diego, and the

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other health resorts of Southern California, to teach that they are unsuited to all cases of consumption; for we are satisfied that in certain cases they would prove most beneficial; but we have known a number of persons to resort thither without reaping the benefits that had been anticipated, and the localities mentioned undoubtedly possess that admixture of land and sea air which we have seen to be a disadvantage elsewhere; and we can not but believe that to many persons this is a disadvantage sufficient to thwart the benefits likely to accrue from the other good qualities pertaining to the climatology of the foregoing region.

In conclusion, we shall not attempt to direct physicians as to where they shall send their patients, or how they shall determine the locality suited to the particular case they may have under advisement; nor will we enter into any of the details as to the personal hygienic management of patients, which is of such great importance in this disease, preferring to leave both of these to the judgment of the intelligent physician, after he shall have carefully studied the characteristics of climate that pertain to the several health resorts in the United States, and the condition and needs of his patients. But in the name of common sense and humanity, and for the sake of science, do not send from friends and the comforts of home those unfortunates who have already passed the bounds of curability. If all such cases were kept at home, and all physicians would give the subject of climate the attention its importance deserves, the number of persons benefited at our various health resorts would be proportionally far greater, and the number called to die among strangers, far from home and friends, would be much less.

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MALARIA;

ITS NATURE AND MODE OF SPREAD.

BY BENJ. H. RIGGS, M. D., SELMA, ALA.

I know of no subject that is of such profound interest to the physician, or that more nearly concerns him in every day practice and experience, than that of malaria—or, as it is sometimes called, "Marsh Miasm"; abounding in all lands, and to some extent in all latitudes; finding its victims in every direction; now manifesting itself in a candid form, and again intercurrent with some other disease and more or less masking its features; and again assuming the shape of another malady, and hiding itself completely behind it, and only to be routed when specially assailed. It is all-pervading; "the viewless winds bear it upon their wings; the evening and morning mists entangle it in their meshes, and the fragrant odors of the spring are treacherous with its poison." This invisible, imponderable, intangible, yet real, positive and undoubted something has invoked the attention of medical philosophers from the earliest ages of this philosophy, for its effects have been seen by every physician who has observed. We are all familiar with it by its effects upon our patients and upon ourselves. The diseases of Alabama, more particularly those of the rich farming lands of central Alabama, are at least one-half, if not a greater per centum, due directly to its influence. Concerning us all to this great degree, I have, on this occasion, accepted the duty of drawing attention to the nature of the malarial poison, by summing up the most pop-

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ular and generally received views held concerning it. As I take it, there need be desired no better field for the study of malaria than this section of Alabama; the harvest is white for the garner; we need workers, skilled microscopists and attentive observers. So far as I am aware, notwithstanding the exceeding prevalence of this substance in our midst, there has been no paper devoted exclusively to this branch of the subject ever reported to our Association, except the paper by Dr. Jos. A Graves, of Summerfield, Dallas county, in 1871, entitled "A Chemical Explanation of Malaria." Other States in the Union have gone into this work, and physicians in other States in the Union have achieved great reputation by their researches.

I propose merely to give to-day, in as brief form as is consistent with perspicuity, a statement of the present status of the subject of malaria among medical scientists. I do this for the double purpose of chronicling medical progress, and serving as a guide for those who may wish to study the subject further. I shall merely view it in the aspects of its modes of development and diffusion.

Malaria is an ancient designation that was originated before the days of chemical discrimination. It has about as much significance as Influenza—THE INFLUENCE. It is true, that malarious atmospheres of to-day are "bad air," but there is much bad air that is not malarious. This word has lost its etymological significance, but has to be retained along with much in our nosology that means one thing and denominates another. "Marsh Miasm," as will be shown further on, is also a bad name; for it proposes to particularize, and does so imperfectly or falsely; for malaria GROWS fatally and abundantly in lands that are apparently arid, desert wastes, as well as in the marshy districts. In different ages of the world many views have been held as to what constituted malaria. Many theories have been advanced in explanation of it; for a long time it was held to be some pestiferous gaseous emanation or combination of gases. Again, it has been thought by some to be due to electrical telluric influence, or to "an allotropic

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condition of atmospheric nitrogen in an electro-negative state." But in obedience to the general tendency of the professional mind of these times, the "germ theory" has been invoked in explanation of its phenomena; and to-day it is almost universally received and taught in colleges, text-books, and monographs, that, in the language of Niemeyer, "marsh miasm—malaria—must consist of low vegetable organisms, whose development is chiefly due to the putrefaction of vegetable substances. It is true these low organisms have not actually been observed. No one has seen 'malarial spores,' but the facts above mentioned, as well as many other causes, urge us to believe that the poison exhaled by marshes, as well as that given off by a patient with measles, is an organic living substance." (Niemeyer's Text Book of Practical Medicine, vol. ii., page 609.)

As I understand it, the above is a fair expression of the present state of the question among medical scientists. The organic germ theory of malaria had its birth-place in America; to Prof. J. K. Mitchell belongs this honor. Its most prominent advocate was Dr. J. H. Salisbury, of Cleveland, Ohio; in 1866 he published an article in the "American Journal of Medical Sciences," in which he gave to the profession the result of his researches, evincing much industry and ingenious investigation, and in which he attributed malarial diseases to the poisonous emanations from a microscopic vegetable belonging to the Palmellæ.

Dr. Lebert says: "Before proceeding farther I may be permitted an etymological observation. Nægeli has named these minute plants *schizomycetes*, because they propagate by fission. The fact really is that the fission is found to be simply a cross-section in the rod-like bacteria and spirilla, and I have often observed it in my ovoid *panhislophyton* of the silk worm. On the contrary, the gemmation of the *micrococcus*, as has been observed in the *microsphere* of small-pox lymph, is rather a biscuit-like contraction, with subsequent separation. * * * * We are concerned here with the lowest vegetable forms, those which are recognized by their extreme

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minuteness, being, in fact, on the ultimate boundary of microscopic vision, and which are held by the best mycologists as incapable of becoming transformed into more highly organized fungi by cultivation. I include, therefore, the groups of globular, rod-like and spiral fungi (it seems to me as irrational to speak of globular bacteria as of globular rods) together under the name of *protomycetes.*

"Though our knowledge in this department is as yet very incomplete, still every one who is familiar with the results of the latest researches will agree with me, that a deep and intimate connection exists in a great number of cases, between the development of protomycetes in the human organism and infectious diseases. I believe also that it will probably happen in this case, as in the thousand-years' conflict over the theory of spontaneous generation, that the facts against the latter, and which correspond to the protomycetic theory, will win more and more victories in the domain of research, until the term *generatio spontanea* will be considered as synonymous with *generatio incognita.* Thus, possibly, may the facts of the germinal origin of infectious diseases supersede the hypothesis of their primitive origin. Still we must be cautious in bringing forward prematurely an exclusive theory in order to support a theory of uniformity.

"Salisbury's statements in regard to the influence of the minute palmella-like fungus have not thus far received scientific confirmation. For this reason the existence of malarial protomycetes can thus far only be accepted as an hypothesis, and it cannot yet be decided whether the air alone is the bearer of malarial infection, or whether, more probably, as I incline to believe, some fluid—it may be dew or mist, it may be drinking water—is the agent. * * * Here non-contagiousness alone is settled; all beyond is conjecture." (Ziemssen's Cyclopedia of the Practice of Medicine, pages 241 and 242.)

My attention was called during the past summer to an article in the April number of the Virginia Medical Monthly, which was an analysis of an article from the January number

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(1874) of the Chicago Medical Journal, entitled "On a Marsh Plant from the Mississippi River Ague Bottoms, supposed to be kindred to the Gemiasma of Salisbury; with a consideration of its Genetic Relations to Malarial Diseases. Read before the Chicago Society of Physicians and Surgeons, Nov. 10, 1873. By Jno. Bartlett, M. D., Chicago." I received a very kind letter from Dr. Bartlett in reply to one I wrote him, urging me to prosecute the investigation in his manner in the malarious suburbs of Selma. One July evening, my friend, Dr. Hudson, and myself, with a good lens, repaired to the ditches and small water courses in the vicinity, and made diligent search for some disease-producing germs; but, let the defect be where it might, we met with no success; but malaria was there in all probability, for my companion was seized within a few days with a malarious fever, which caused him to shake and shiver at intervals for many months. *Propter hoc aut post hoc* this is nevertheless a true record. Dr. Bartlett's article in the Chicago Journal reflects much credit upon him for the zeal, energy and judgment displayed in his investigations, and does credit to his generosity of heart in that he gives willingly his friend, Safford, such credit as he might claim as a discoverer.

Dr. B.'s first effort was made to ascertain for himself the correctness or fallaciousness of the views advanced by Dr. Salisbury before referred to, and the correctness also of the almost annihilating criticism of Dr. H. C. Wood on Dr. S.'s paper in 1868; in order to do this, he states "that in September, 1871, in company with Dr. J. P. Safford, he was induced to examine the slough margins in the lower river bottom opposite Keokuk, Iowa, (where the ague was epidemic) in search of the plant imperfectly described by Dr. Salisbury's paper, and a sod containing numerous plants was obtained by Dr. Safford. On comparing the specimens of plant with Dr. Salisbury's account, we could only conclude," writes Dr. B., "that the plant found was a variety of the gemiasma, differing from them in several particulars, chiefly, perhaps, in respect to size; these were as large as rape seed."

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By continuing their investigations they were impressed with the apparent relation of the occurrence of ague and malarious diseases with the presence of this plant, which Dr. B. calls Safford's plant, in honor of his friend. "According to Profs. Babcock and Munroe, Botanists, Chicago, it is the *Hydrogastrum* of Robenhorst, or the *Botrydium* of the Micrographic Dictionary." (Virginia Medical Monthly, April, 1874, page 20.)

In the Transactions of the Virginia Medical Association for 1874, on page 41, Dr. Wm. D. Harper, of Lynchburg, states that—"Having had a case of fever and ague, originating in Bedford county, near the Peaks of Otter, and this disease being exceedingly rare in that section, I concluded that the cause must be strictly local, and therefore determined to investigate with the view of finding Safford's Ague Plant." He found the plant, sure enough, but alas! for the integrity of the evidence as a support to Safford, he found it growing in the mountains, where malarious diseases were extremely rare, "in a valley in Bedford county, near the Peaks of Otter, after three heavy frosts, and where not a case of intermittent fever had originated for the past nine years." (Virginia Medical Monthly, December, 1874.)

Notwithstanding the evident adoption by medical scientists of the organic germinal cause of malarious diseases, and notwithstanding the commendable researches of Drs. Salisbury and Bartlett and others in America, and Balestra, Lebert, Palli, Beale, and hosts of others in Europe, the attempt to attribute the spread of infectious diseases to fungi or algæ has not been successful. Salisbury's Palmella, Bartlett's Safford's Plant, or Balestra's Microphyte granule, are not yet demonstrated as constituting the essence of malaria. There is no doubt that organic matter exists in considerable quantity in the air of marshes. "Discovered by Vauquelin (1810 and 1811, in the air collected over the Languedoc marshes), by De Lisle, and again by Moscate (1818, in the air of a Lombardy rice field), and examined more recently by Boussingault (1829, 1839), Gizot (1859), and Becchi (1861), the or-

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ganic matter seems to have much the same character always. * * * Dr. M. P. Balestra has described spores and sporangia of a little algoid plant in the air of Rome and its vicinity, and the same plant is found abundantly in the water of the marshes near Rome." (Parkes' Practical Hygiene, fourth edition, pages 106 and 107.)

Thus there is abundant encouragement for the prosecution of research in this direction; it seems that we are on the road to true success, but the coveted goal does not yet gladden the vision of the earnest investigator. The most important organic impurity of the air is malaria, and when a climate is regarded as unhealthy, it is generally meant that it is malarious. For many long years, and even now in most text books, it is taught that heat, moisture and vegetable matter are necessary for the formation of malaria; I believe that later developments go to show that too much stress is laid upon vegetable decomposition as a producing factor. If the view now received with regard to spontaneous generation holds good with regard to the invisible but potential kingdoms beneath and around us, there is no such thing as spontaneous or self generation; malarial diseases belonging to the infectious class, owe their existence to the effects of a specific poison operating on the human organism; this specific cause is a living, multiplying organic body (protomycete of Lebert) that moves upon the face of the earth and begets its progeny like any other creature; as the germinal cause of scarlet fever, measles, yellow fever, etc., has existed for many ages, never originating spontaneously but spreading by its colonization of germs, as mildew, smut, rust, etc., never originates *sui sponte*, but is the offspring of its own parents; so the protomycete of malaria is not the product of decomposing vegetable matter, heat of 65° Fahr., and water, but is the child of its own parent, spreading according to the law of its kind. The NEST for its growth is composed of air, moisture and some impurity of soil, and doubtless there are always present some vegetable matter in solution, and an isotherm of summer temperature. Stagnant ponds, covered with vegetable

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growths, and swamps and marshes filled with vegetable debris, are not the homes of this poison necessarily, neither are they a prerequisite to its existence. If they remain at or about one level they cause no sickness. There is everywhere over the globe what is called ground-water; this subsoil or ground-water varies in different parts of the world in its distance from the surface, and varies in different seasons of the year, according to the rainfall. My observation leads me to confirm the ideas of Parkes in his work on Hygiene, and agree with the views of Dr. A. G. Tebault, of Princess Ann county, Va., advocated in his "Study of Malaria," in the September number, 1874, of the Virginia Medical Monthly. Dr. Parkes says, on page 307: "The rise and fall of the ground-water, by supplying the requisite degree of moisture, or on the contrary, by making soil too moist or too dry, evidently plays a large part in producing or controlling periodical outbreaks of paroxysmal fevers in the so-called malarious countries. The development of malaria may be connected either with rise or with fall of the ground-water."

Dr. Tebault says: "The conclusion at this stage is, that malaria requires for its propagation a permanent, not shifting soil, existing in a moist stagnant condition; such, indeed, as is suited to the growth of some sort of vegetation, however coarse or simple in structure, but dependent upon a supply of water by infiltration."

Aitken says, (page 465, Science and Practice of Medicine, Vol. 1, Clymer): "But although it has been observed that absolute marshes do not always produce agues, and that agues are not always due to obvious marshes, yet it is generally found that in districts where such paludal fevers abound the surface is porous, penetrable and retentive of moisture, although it does not appear on the surface; that the district had been at one time submerged, and that it continued slowly but constantly to undergo the process of dessiccation; or, while at certain seasons it imbibes moisture from local or meteorological sources, at other seasons it undergoes the drying process under intense solar heat. Such are some of the

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most sickly and febriferous districts in Europe, India and America."

Not only is there abundant positive evidence of the effect of this state of things in the evolution of malaria, but the negative evidence is equally as strong, if, unfortunately, not so abundant. "An increased outflow lowering the subsoil water, has been observed in drainage operations, and very malarious places have been rendered quite healthy by this measure, as in Lincolnshire, and many parts of England. The case of Bofaric, in Algeria, is a good instance. Successive races of soldiers and colonists had died off, and the station had the worst reputation. Deep drainage was resorted to, the level of the ground-water was lowered less than two feet. This measure, and a better supply of drinking water, have reduced the mortality to one-third."—Parkes. "Ancient Rome was once the seat of so many fatal epidemics, that the Romans erected a temple to the goddess Febris. These epidemics were known to arise from the great masses of water poured down from the Palatine, Aventine and Tarpeian hills, and becoming stagnant in the plains below, and converting them into swamps and marshes. The elder Tarquin ordered them to be drained, and let their waters by means of sewers to the Tiber. These subterraneous conduits ramified in every direction under the city and were of great height and breadth. This system of drainage, which was continued as late as the Cæsars, rendered Rome proportionably healthy, and the seat of a larger population than has since perhaps been collected within the walls of any city. On the invasion of the Goths, however, the public buildings were destroyed, the embankments of the Tiber broken down, the aqueducts laid in ruins, the sewers obstructed and filled up, and the whole country being now again overflowed, Rome has once more again become the seat of an annual paludal fever, as in the times of her earliest foundation."—Aitken. It seems that the mineral composition of the soil plays no part in the production of malaria; it has been found on chalk, limestone, sand, and even, under special conditions, on granite soil. Many malarious soils contain a large proportion of iron.

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I think there is an erroneous impression, even in the professional mind, in regard to the horizontal and vertical range of malaria. I have known instances where innocent swamps and ponds have been accused of being the cause of malarial diseases in a locality where such ponds and swamps were, in some instances, one or two miles away, and were covered and surrounded with trees and undergrowth. It is unusual for malaria to move far from its source; even at times a few feet will circumscribe the area of its potency; this fact, if it be one, and I think it is one in the main, is of great practical value to all who reside in a malarial district of country, and its general dissemination as a truth among country denizens and village people may enable them to rise to a higher level of health, and enjoy the countless blessings that accrue to a vigorous development; enable them to enjoy an exemption from chills, fevers, neuralgias, aches, redundant bile, pecant humors, and dwarfed intellectual and physical propor ions.

Dr. Tebault states that—"Malaria is somewhat heavier than atmospheric air, but under certain hygrometric conditions it rises and floats in the air, and obeys its currents. Its horizontal range is more limited than what one might have supposed, being seldom conveyed by ordinary winds beyond a distance of 500 yards over land, and still less over water, which latter, in all probability, has a tendency to attract and absorb it. Its vertical ascent, under usual circumstances, does not appear to exceed 300 feet before it is rendered innocuous by dispersion. Should it be arrested by hills to leeward, it may accumulate there by continued influx, or be propelled even to a height of 500 feet or more. * * * * The conduction of malaria seems much facilitated by the hot days and cool nights of its appropriate season. * * * * Winds, particularly those from the south and west, bear it in their direction, whence places lying to the north and east of infected spots are more insalubrious than those in opposite directions." (Virginia Medical Monthly, September, 1874, pages 333 and 334.)

Dr. Parkes gives a somewhat wider range than Dr. Te-

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bault, but does it in order to be secure in his statement. He says: "It is well known that even a slight elevation lessens danger—a few feet, even, in many cases—but complete security is only obtained at greater heights. * * * I cannot help suspecting that 1000 to 1200 feet would generally give security" (in vertical ascent).

"*Horizontal Spread.*—In a calm air, Levy has supposed that the malaria will spread until it occupies a cube of 1400 to 2000 feet, which is equivalent to saying it will spread 700 to 1000 feet horizontally from the central part of the marsh."

It does not spread so far over water; and it is capable of being wafted farther by strong winds. The virulence, as it were, of malaria varies in different countries, its infecting distance both over land and water being strongest in the tropics.

Prof. Aitken confirms the above statements in the main (see pages 1013 and 1014, vol. ii., Science and Practice of Medicine, Clymer), and makes the following statement, which I regard of sufficient practical importance to embody in this report; the same point has been noticed by writers in this country, and has been utilized by people in constructing their houses and in adapting summer sleeping quarters:

"In towns partially freed from miasmata by extensive drainage, the difference of a few feet perpendicular height makes an almost inconceivable difference in the liability of persons to paludal disease. The barracks of Spanish town, the capital of Jamaica, for instance, consists of two stories, or of a ground floor and a first floor; but it being found that two men were taken ill on the ground floor for one on the first floor, it was at length ordered that the ground floor should be no longer occupied. Dr. Cullen remarked a similar result at Porto Bello, Dr. Fergusson in Santo Domongo, and Sir Gilbert Blane in the expedition to Walcheven. This law is so well understood in the West Indies that in Demerara and many other parts the houses are built on dwarf columns, after the manner of corn stacks, in order that a stratum of air may be interposed between the house and the ground. In Rome

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and in other towns in Italy, it is also so well known that the lower rooms of the houses are abandoned, the family occupying the upper rooms as affording a greater protection from the paludal poison."

I have thus, in as brief manner as possible, given a short report of the present view of the nature of the cause of malarious fevers as taught by most medical scientists of to-day. They may be formularized as follows:

1st. That malaria is due to vegetable organic germs or spores.

2d. That these grow and multiply in a damp soil with superficial ground-water, which has been exposed to a heat at and above that of summer temperature, and which contains in solution more or less vegetable matter. Too much water is as fatal to this process as too little water.

3d. That these germs are heavier than the atmospheric air; that their vertical spread is short, varying from thirty feet to one thousand; their horizontal spread does not often exceed 500 yards (or 1200 or 1500 feet).

4th. That a sure way to prevent the growth of malarial germs is to keep the ground dry; lower the level of the ground or sub-soil water. As surely as that vaccinnation will prevent small-pox, will a thorough system of sub-soil drainage prevent malaria.

It will not be out of place to illustrate in a practical way the value of drainage. Mr. R., living in the canebrake of this State, bought a place at a low price in that fertile section because it had the reputation of being sickly. Every white family that lived there was compelled to move away after much sickness and many deaths. The first summer he occupied it, "the doctor was there every day;" his family suffered the fate of all the others, though, fortunately, there were no deaths. He became impressed with the fact that his ground was very wet, and remained so late in the summer. He determined to try the value of drainage; he encircled his yard with a deep ditch, and had another to run off from this to the neighboring natural drains; in digging

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this latter ditch he was compelled to cut through a vertical dip of crystalized lime-rock. These ditches effectually drained the ground on which his residence was located; it would seem that this lime-rock prevented the water from escaping from the soil; gathered it, as it were, into an earth-filled basin, thus raising the ground-water to a high level. After this the place was as healthy as could be desired; there was no longer any need for the visits of the physician; neither did the condition of neighboring plantations affect him; his little well-ditched residence-grounds were no longer pestilence-producing, but were dry and healthy, and the abode of domestic comfort and happiness.

There is a moral to this report of mine that I would like to impress not only upon those who hear me in the medical profession, but upon every citizen of the State of Alabama—a moral that is no longer within the mystic realm of philosophic speculation, but stands out a beacon truth in the light of sanitary science; a moral that inculcates a procedure that may be complex, that may be costly, that may be laborious, according as to its perfection and completeness, but a procedure that offers the most complete exemption from all malarious diseases in their myriad phases, and would more largely reduce the death-rate in Alabama than any other, thus giving us an enviable and attractive reputation abroad—and that moral is, THOROUGH DRAINAGE.

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RECENT PROGRESS IN GYNECOLOGY.

BY F. M. PETERSON, M. D.

There is no department of our profession in which we now have a greater number of intelligent and active workers, and more decided progress, than in that of Gynecology. The dissensions which have existed amongst the honest and capable specialists in this field, *may, possibly*, have produced greater industry and resulted in greater progress, still, I am inclined to regard them as unfortunate—as tending rather to retard than to stimulate advancement. The human mind appears to be so constituted that there is a *constant tendency* to the adoption of extreme views and opinions. This seems to be especially so in regard to the art and science of Gynecology. When it was first announced, by Henry Bennet, that inflammation and ulceration, confined chiefly to the lower segment of the uterus, were the starting point in uterine pathology, the profession, especially in this country, almost universally adopted his teaching and practice. When a patient complained of any symptoms, which could be referred to the uterus, a metroscopic examination was at once instituted, and if the os or cervix was the least diseased, or *even very red, indicating that it might* become so, the application of caustics was resorted to—Nitrate of Silver, Acid Nitrate of Mercury, Potassa cum Calce, *Potassa Caustica, &c.* The Potassa Caustica was the favorite caustic in hypertrophy of the cervix, "*to melt down the tissues.*" Thus was every woman treated who had any symptoms referable to the reproductive organs;

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and often by physicians with little or no experience in such cases. Of course, incalculable mischief was done. But the doctrines and treatment of Bennet soon underwent severe, (almost annihilating,) criticism, by cotemporary gynecologists, and professional opinion, which iterated for a time between the doctrines of Bennet and the *Mechanical School* of Uterine Pathology, is finally swayed to the other extreme, and we are now in danger of finding a pessary in the vagina of every woman who complains of *backache*. Graily Hewitt is the recognized leader of the new Pathological school. In the last edition of his work, (Diseases of Woman, 1874,) he states his theory of the origin of a *large number* of all the cases of uterine diseases, as follows: He says—"It is now time, however, to go a step beyond this, and to explain how and why it is that the uterus becomes affected with inflammation. Facts incontrovertibly appear to show, that instead of beginning with a description of inflammation of the uterus, we have to begin with certain alterations of the uterus, which very commonly, nay, almost constantly, cause this inflammation, viz., those alterations in the form of the uterus which are now spoken of as flexions. The whole truth is not expressed by the foregoing statement. But the views I shall proceed to develop more at length, may be concisely stated as follows:

"*A*." Patients suffering from symptoms of uterine inflammation, (or more properly, from symptoms referable to the uterus,) are almost invariably found to be affected with flexion, or alteration in shape of the uterus, of easily recognized character, but varying in degree.

"*B*." The change in the form and shape is frequently brought about, in consequence of the tissues of the uterus being previously in a state of unusual softness, or what may be often correctly designated as chronic inflammation.

"*C*." The flexion once produced, is not only liable to perpetuate itself, so to speak, but continues to act incessantly as the cause of the chronic inflammation present. Logically, and indeed practically, there are good reasons for placing flexions first in the order of sequence."

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His tabular statement embraces six hundred and twenty-four cases.

He says: "The percentage of cases in which evidences of chronic inflammation of the uterus, unattended with flexion, existed, is extremely small. The flexion cases were very generally attended with alterations, such as would be properly termed as of a chronic inflammatory character; but it is precisely in those cases where the symptoms of irritation or inflammation were most marked, that severe and well-established flexions were found to exist. The inference seems irresistible, that the alteration in shape was the principal, and the really important, feature in such cases."

That changes in the *size* and *shape* of the uterus *can occur*, without *flexion*, *congestion* or *inflammation*, *seems to me almost impossible*. That displacements may be *produced*, by vestmentary and other causes, can be readily understood; that versions and flexions may be thus produced, without change in the size of the organ as a preceding condition, may be *possible*. But is it not possible that, in a large majority of cases, the changes in the size and shape of the uterus; the anteflexions and ante-versions, the retro-flexions and retro-versions, and the lateriflexions, are *secondary*, and due to fluxion, hyperæmia, congestion, inflammation, and hypergenesis of tissue, subinvolution, &c.?

Dr. Henry Bennet* read a paper before the British Medical Association in 1870, in which he reiterated his former views, and took strong grounds against the Mechanical doctrines and treatment of the day. Henry Bennet and Graily Hewitt represent the two extremes of pathology and treatment. Barnes, Duncan, Scanzoni, Thomas, Sims, Barker, *now* occupy more conservative ground. Tilt still occupies the extreme, on *Ovarion Pathology*, but he, too, is leaning to more conservative views. There is, after all that has been accomplished, a very unsettled state of opinion in regard to uterine pathology, and much of the treatment has no well settled

*British Medical Journal, October, 1870.

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pathological basis—is simply tentative, and often very unsatisfactory.

That men of distinguished ability and great professional influence, and capable of doing a great work in advancing the science, should become the advocates of some dogma, is unfortunate—is deplorable! One adopts the doctrine that inflammation and ulceration constitute the primary morbid change; another, that displacements and changes in size and shape are primary; another, subinvolution; others, *irritable uterus (?)*; others, constitutional dyscrasia; others, endo-metrial catarrh; others, changes of the organ during gestation, and at the menstrual nisus; and *one* has recently discovered that latent gonorrhœal poison plays an important role in uterine pathology! Is it not extremely desirable that large, comprehensive and philosophical views should displace the narrow, dogmatic opinions which have too often characterized our great leaders? And after all, may not a *modicum* of truth be found in all of their theories? The result of difference of pathological views is, of course, *diametrically* opposite modes of treatment. "When doctors disagree, who shall decide?"

"*In medio tutissimus ibis.*"

Very many causes may become pathogenetic factors in the production of uterine diseases.

1. General constitutional diseases—as plethora or anæmia, nervous or circulatory disorders, functional and organic diseases of the liver, stomach, and other organs.

2. Fluxion, resulting in congestion, inflammation, determined by the menstrual nisus, by changes of temperature,—by a thousand causes and influences.

3. Displacements, caused by *corsets*, *tight waists*, blows, falls, and all other mechanical causes.

4. Subinvolution, after accouchment, after the *menstrual molinum*, after abortion. *No one pathological condition can be considered primary, in all cases, and no one cause is always paramount.*

The time has come to obliterate all factions, and to place this specialty upon the broad platform of an enlightened pa-

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thology, upon which we may base a rational, scientific and successful treatment. I think I can see a tendency in this direction, in the recent literature of the subject, and I hail it as the surest evidence of progress in this department.

POST-PARTUM HÆMORRHAGE.

The importance of this subject, and the great interest which it has recently excited, must be my apology for introducing it here.

Injections into the cavity of the uterus of Per-chloride and other Per-salts of Iron.

In November, 1869, Dr. Robert Barnes read a paper before the London Obstetrical Society, on "Uterine Hæmorrhage After Labor," in which he advocated the injection of the per-chloride of iron into the cavity of the uterus, with great earnestness and force. "It was a new power to save women from dying of hæmorrhage; it acted after the exhaustion of nerve force; it acted by coagulating the blood in the mouths of the open vessels and corrugating the inner surface of the uterus; it acted after the failure of other means. Ergot, compression, kneading and cold should not be trusted, if they failed to *act quickly;* they might do harm if too long continued. In his practice he had observed three orders of cases. In the first, all recovered. In the second, recovery occurred, but was followed by phlegmasia dolens. In the third class, death followed; the remedy came too late! Here the remedy was transfusion.

The paper was *eulogized* and *endorsed* by a large majority of the members present. It produced a profound impression on the minds of the medical men, both in Europe and in this country, and the practice was adopted quite extensively.

Turn now to a discussion of a case of post-partum hæmorrhage, reported to the Edinburgh Obstetrical Society, by Dr. Connel, December 9th, 1874.* This case excited great inter-

*Obstetrical Journal of Great Britain and Ireland, March, 1875.

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est, as the patient had died in one hour and a half after the injection of the styptic. The discussion was continued for two meetings of the Society, and a large majority of the members gave their *experience* and *opinions* in *opposition* to the injection of the per-chloride of iron into the cavity of the uterus in post-partum hæmorrhage.

The condemnation of this treatment in 1875 is in striking contrast with the favor with which it was received in 1869.

Dr. Snow Beck is uncompromising in his opposition to the treatment of Barnes and his followers. He stated* that he had seen nine or ten cases in which death followed this treatment. All presented symptoms analogous to those known under the name of puerperal fever. The blood in the cavity of the uterus is coagulated into hard, blackened masses, by the salt of iron, which it can not expel. These cause great irritation, pain, and perhaps inflammation. About the third day they begin to decompose, and then septic absorption takes place and fills the blood with poison, and then septicæmia becomes an element in the case, in addition to the metro-peritonitis already existing.

Must this treatment be abandoned? Believing that it has done more harm than good, I would be inclined to answer affirmatively. "It is a clinical question, and can not be settled by abstract reasoning, but only by experience."

TINCTURE OF IODINE.

In a paper read before the Obstetrical Society,† October, 1874, Dr. Trask recommends this article as an injection into the cavity of the uterus, in hæmorrhage after delivery. He thinks it perfectly safe—at any rate free from the evils incident to the employment of iron. It is an antiseptic, and is probably the surest of all means of counteracting a tendency to absorption of septic matter into the system after delivery. Since adopting the practice of injecting iodine, after operations

*Transactions of the Obstetrical Society, London, 1873.

†New York.

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upon the interior of the uterus, it is stated that Dr. Emmet has not encountered a single case of septicæmia. The quantity used was one drachm to one ounce.

HOT WATER.

Dr. Wildeband* strongly recommends hot water in *all kinds* of uterine hæmorrhage. He is convinced that hot water (100 deg. Fahr.) exerts a far more energetic action on the muscular structure of the uterus than cold water, either alone or combined with astringents. He has never seen any bad effects from it. A brief summary of the treatment may not be inappropriate.

Precautionary Measures.—When the tendency to hæmorrhage is known, or suspected from any cause, the following measures may be adopted:

1. In plethora—Venesection, to 12 or 16 ounces.
2. If there is any nervous excitement, Potassium Bromide, xx grs. every hour until the system is brought fully under its sedative effects.
3. Enemata to empty the bowels.
4. Catheterism, if necessary.
5. *Empty the uterus slowly*, and allow external rotation to occur without interference.
6. Follow the contracting uterus with the hand, and have the hands of a well instructed attendant always over the organ to keep up gentle, but firm pressure, until after the *delivery, and until the bandage is applied.*
7. Remove the placenta in fifteen to twenty-five minutes, by supra-pubic expression, and very gentle traction. This must be done *slowly, and with great care.*
8. *Immediately after the delivery, a broad bandage* must be applied, extending from the trochanters to a little above the umbilicus, to support the relaxed abnormal muscles. *This is a very important measure.* (I am sorry to see a disposition to undervalue it).

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*British Medical Journal, February 13, 1875.

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9. A full dose of Ergot, at least thirty minutes before the birth of the child. Fl. Ext. Ergot, or Ergotine, may be administered sub-cutaneously. *The effect of Ergot must be secured.*

10. If the patient is nervous, give an opiate.

Measures during the Hæmorrhage.—1. Secure and maintain uterine contraction, by pressure or compression—*not by kneading.*

2. Apply cold water and vinegar, ice, to hypogastrium and vulva; ether spray over the abdomen; ice in the vagina, and over the fundus uteri.

3. Sinapisms to arms, legs, *spine, mammary glands.*

4. Remove clots from vagina and uterus, if necessary. Introduce the hand into the cavity in violent cases, and stimulate contraction.

5. *Stimulate in exhaustion*—Brandy. Capsicum—a teaspoonful. I have seen *this* promptly and decidedly effectual after the failure of brandy.

6. Brandy and beef tea by enema.

7. If there is jactitation, use opium.

8. Ergot, repeated if necessary.

9. Pressure upon the abdominal aorta.

10. Galvanization, or Faradization.

TRANSFUSION.

During the last year transfusion has been practiced more extensively than at any time in the history of the operation. It has awakened new interest everywhere. The forms of transfusion most employed and attended with the best results are—

1. Transfusion with defibrinated blood.
2. Mediate transfusion with pure blood.
3. Immediate transfusion from "*vein to vein.*"
4. Immediate transfusion from "*artery to vein.*"

The first method is most generally adopted—the danger of clots is avoided. The second is generally abandoned as lead-

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ing to embolism, &c. The third method bids fair to become the popular method; it is practiced by the use of the aspirator, from vein to vein, &c.; there is little danger of clots. Dr. Aveling, who practices immediate transfusion, has invented an instrument for the purpose, and "many favorable cases are reported." The old method was from artery to vein, the blood being taken from the lower animals, generally from lambs. "A large number of successful cases are reported, mostly in Germany." Dr. Joseph W. Howe* has recently proposed the transfusion of *goat's milk*, as a substitute for human blood.

The hypordermic injection of blood is another method which has been proposed. Dr. Lendenburger† has performed this operation with imp ovement to his patient. I expect to see *transfusion* become popular within the next few years in *post partum* hemorrhages, in losses of blood generally, in anæmia, and many other diseases. In cases of hemorrhage, it would, of course, be useless to adopt it until the hemorrhage had ceased.

DYSMENORRHŒA—PIN-HOLE CERVIX.

In a discussion of the subject of dysmenorrhœa, which took place recently in the Obstetrical Section of the British Medical Association;‡ Dr. Matthews Duncan said, "He had met with the pin-hole cervix only once in a few years in a large practice. The pin-hole os was rare, and when it did exist, it did not cause dysmenorrhœa. A pin-hole os was large enough to allow a woman to bleed to death in a few hours. The whole theory was fallacious. Mechanical dismenorrhœa was *spasmodic*. The cervix might be cut off without benefit. Mechanical treatment was useful, but must be employed with care. The simplest treatment is the best. Many cases were cured by the single passage of a bougie. A well marked

*New York Medical Journal, May, 1875.
†Medical Corr. Blatt, 20, 1874.
‡British Medical Journal.

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analogy is to spasmodic stricture of the urethra. *Spasm of the uterus is the essence of dysmenorrhœa.*"

Dysmenorrhœa—Treatment with Nitrite of Amyl and Belladonna.—Dr. Mary Putnam Jacobi* read a paper on this subject at a recent meeting of the New York Journal and Library Association. "Spasmodic contraction of the blood vessels, resulting from irritation of the vaso-motor nerves, is the cause of pain in spasmodic dysmenorrhœa. Upon these considerations the remedies are used. Belladonna is to be administered previous to the occurrence of menstruation to produce its *secondary effect*, which is dilatation of the blood vessels. Nitrite of amyl is used for relaxing blood vessels. This is the physiological action of it. Great relief is afforded in all cases of dysmenorrhœa." Commence the belladonna several days before menstruation, and when the pain comes, administer by inhalation two to six drops of nitrite of amyl, *pro re nata.*"

Dr. Sell remarked that he was in the habit of administering nitrite of amyl by the mouth. He prescribed one-drop doses in peppermint water, one drachm every half hour. This method was just as good as when the remedy was inhaled.

Dysmenorrhœa—Obstructive.—This form is considered by Dr. Barnes† the most common. Mechanical obstructions to excretion are the most important factors in dysmenorrhœa; they are most frequent at the orifices of the genital canal. The essential condition of dysmenorrhœa is *retention of menstrual secretion.*" Mechanical stretching of the cervix by means of tents and dilators of all kinds will produce only *temporary* relief, just as in case of organic stricture of the urethra. After one or two periods all of the phenomena recur, unless, in the meantime, impregnation takes place. He recommends a bilateral *division* of the vaginal portion of the cervix. This *should not* extend to the internal os, nor involve the blood vessels which are found in that portion of the uterus. Kuchenmeister's scissors, or a single-bladed uterotome,

*Medical Record, January 2, 1875.

†Medical and Surgical Diseases of Women.

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may be used for the operation. There is little danger in the operation. The after-treatment consists in keeping the divided portions separated by interposing lint saturated with carbolized oil." The operation recommended by Simpson, Hewitt, Sims, Thomas, and others, is incision *through* the internal os. This involves considerable risk, and should not be done unless there is urgent necessity for it. Dr. T. G. Thomas, in a case of this affection, the obstruction being at the os externum, which barely admitted a fine probe, removed with a bistoury a small ring of cervical tissue from about the os uteri. He speaks of the operation as devoid of danger. (Medical and Surgical Reporter.)

VAGINAL INJECTIONS.

At a meeting of the Dublin Obstetrical Society,* Dr. Thos. Moore Maddin gave a history of a case of intense uterine colic, followed by severe metro-peritonitis, which came on suddenly during the use of an astringent injection with an ordinary vaginal syringe. Complete collapse followed, with incontrollable retching, the patient being in considerable peril for several days. The symptoms were due to the injected fluid having passed through the patulous os into the cavity of the uterus, which was in a state of sub-involution, and by the escape of a portion of it through the dilated Fallopian tubes into the peritoneal cavity. Dr. F. D. Lente† reports a number of cases of uterine colic, &c., from vaginal injections. I have seen a number of other cases mentioned in the medical periodicals during the last year.

I have had several cases in which great pain, uterine colic, pallor, cold sweats, &c., followed ordinary injections of tepid water with a Davidson's syringe. In two cases, severe metro-peritonitis, which recovered after a very serious illness. In one case, pelvic cellulitis followed the injection, and terminated in abscess, and put the patient's life in imminent peril.

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*February 13, 1875. Irish Hospital Gazette, p. 223.

†New York Medical Journal, September, 1870.

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It was not until after months of great suffering that partial recovery took place. My own sad experience occurred before I saw any cases reported. Vaginal injections are used freely and extensively for a *special purpose*,* and often with *cold water*, and the number of cases of disordered menstruation, and other troubles referable to the reproductive organs, due to this cause, is largely on the increase. At certain times there seems to be a suction force exerted by the uterus, which tends to carry fluids into the cavity. The central hole in the nozzle of the syringe should always be closed so that no fluid can be forced into the cavity.

DYSPAREUNIA,

a word coined by Dr. Barnes to signify pain or difficulty in coition, "derived from *duspareunos*, a word used in this sense by Sophocles." The causes may be congenital or acquired. Absence or imperfections of vagina or vulva, unyielding hymen, &c., atresia of vagina or vulva, inflammatory affections of the pelvic organs, especially colpitis, resulting from acute gonorrhœa, or other cause, vaginismus give rise to dyspareunia. May result from disproportionate development. This is observed in young girls who marry before maturity. May happen in women who marry late in life. After the climacteric, the uterus, vagina and vulva undergo atrophic involution, and the tissues lose their elasticity. Sexual relations may be painful or dangerous under such circumstances. The condition called *coccydynia* may be a cause of dyspareunia. The cause is not always confined to women—cases may be traced to the other sex. Imperfect or awkward intercourse induces a *chronic nervous irritability which in turn renders approach intolerable.* This is a not infrequent source of distress in couples ill-matched as to age, physical strength and disposition." No matter what the cause may be, "dyspareunia" gives rise to much unhappiness, and disruptions of conjugal relations may often be traced to this cause.

*To prevent conception.

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ABDOMINAL OVARIOTOMY.

This operation, though violently opposed by a large majority of the profession, until within the last fifteen or twenty years, is now recognized as a legitimate and justifiable surgical procedure. No great improvement has been made, so far as the mortality is concerned. Statistics of more than two thousand cases show an average death rate of one in 3¼. The success of McDowell was nearly equal to this. There is no unanimity on the manner of securing the pedicle. Dr. McDowell ligated the pedicle with a strong twine, and left it dependent at the lower angle of the wound, and thus *drainage* was secured. Drs. Tyler Smith and Peaslee use a strong ligature, cut it off short, and return it into the cavity of the peritoneum. Duffin, Erichsen, Huchinson, Spencer Wells, Baker Brown, Keith, Kœberle, Atlee, Thomas, Kimball, secure the pedicle externally, with a clamp. This appears to be the most popular method. Dr. J. Marion Sims' method is tying the pedicle with silver wire, which he says becomes sacculated, and there is no harm; when the pedicle is broad, he secures it with a number of wires in segments. It is stated that Dr. Emmet also practices this method. Dr. Bebee has proposed torsion of the arteries. Dr. T. G. Thomas,* in speaking of the abdominal incision, says: "The most rational deduction to be drawn from the facts is, that the shorter the incision by which the sack can be removed, '*tuto, cito, et jucunde,*' the better for prognosis." The greatest improvement is that which was brought prominently to the attention of the profession, by Dr. Sims, in a paper, published Dec., 1872,† viz., that of *drainage* of the peritoneal cavity, to prevent septicæmia. Drainage was effected by the use of the Chassaignac tube, passed through the Douglas *cul de sac*, and through the vagina. Through this the cavity was regularly washed out, with carbolic water or other fluid.

Through the courtesy of Dr. Sims, I saw one of his cases,

*Diseases of Women, 1874.

†New York Medical Journal.

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with this drainage tube in situ. I was most favorably impressed with his views with regard to the importance of drainage, to prevent septicæmia, &c.; yet I could not think his method free from danger. The presence of such a tube through the retro-uterine *cul de sac* must, in itself, prove a source of great irritation. I do not know what his subsequent experience has been.

Dr. T. G. Thomas, recognizing the importance of drainage, recommends a glass tube about 8 inches long of a diameter of ½ to ¾ inch, which is inserted just above the pedicle, and passed to the depth of the Douglas pouch—in every case, except when there was no fluid. When a *method* of *drainage* which secures the object without any danger, is discovered, I think there will be great improvement in the death rate. Septicæmia is the cause of death in a very large number of cases.

VAGINAL OVARIOTOMY.

This operation has been performed by Dr. T. G. Thomas, and has been twice repeated; once by Dr. Gilmore, of Mobile; and once by Dr. Battey, of Georgia; and possibly by others. Dr. Thomas* says: "I feel sure that this procedure will, when its merits are fairly tested, occupy an important place in the treatment of ovarian cysts. It is fully as easy of performance as abdominal ovariotomy; is evidently attended by much less danger; holds out to the patient the opportunity of avoiding many weary months of suspense, in anticipation of that more grave procedure; is equally applicable to multilocular and unilocular cysts; gives abundant facilities for securing the pedicle; and is, so far as my experience and knowledge go, defensible as a surgical procedure against all but theoretical objections."

NORMAL OVARIOTOMY.

Proposed by Dr. Battey, of Georgia. He claims "that this

*Diseases of Women, New Ed.

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operation is new in surgery; is original with himself in its conception, elaboration, and successful execution."

What he proposes is this: "Ovariotomy to determine the change of life; and the change of life for any grave disease, which is curable with it, and incurable without it."

1. Determines the change of life.
2. Sterility results.
3. Does *not* involve a loss of aphrodisiac sense.
4. Does not involve a loss of feminine graces.

The operation has attracted some attention. Two operations have been performed in New York. One by Dr. T. G. Thomas, in which both ovaries were removed, "with great improvement;" the second by Dr. Sabine, in which the left ovary was removed, and with a cure reported as the "result." Dr. Gilmore, of Mobile, has operated once, the patient dying several months afterwards. I have seen no report of Dr. Battey's operations.

I am not now favorably impressed with the operation. Castration will not cure spermatorrhœa; neither can I believe the removal of the *testes muliebres* will cure the diseases for which it is recommended. I am disposed to class it with the operation of Clitoridectomy of Isaac Baker Brown—"The removal of the clitoris for the purpose of curing epilepsy, is an operation which has met with little favor. The evidence which has been hitherto adduced, has failed to satisfy the profession that the operation succeeds in its object."*

UTERO-GASTROTOMY.

At a recent meeting of the New York (State) Medical Association, Dr. J. Marion Sims† made some remarks on this subject. Having read a paper at the last annual meeting on the removal of intra-uterine fibroids by enucleation, he now proposed to speak of the removal of larger uterine fibroids by abdominal section—whether intra-uterine, interstitial, or

*Diseases of Women, by Graily Hewitt, 1874.
†New York Medical Record, February 15th, 1875.

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extra-uterine in character. This operation is now on trial. It stands where Ovariotomy did twenty years ago. It has the same opposition to encounter, and will doubtless achieve the same success. In this country it has been performed successfully by Kimball, Burnham, Boyd, Storer, Darby; in England, by Clay, Fletcher; and recently by Lawson, Tait, and Kœberle." Dr. Sims has operated twice for the removal of the uterus with a large fibroid, by abdominal section. Both cases were unfavorable for the operation, and both terminated fatally.

Myo-Fibroid Tumors of the Uterus treated by Hypodermic Injection of Ergotin, by H. Hildebrandt, of Konigsberg.

The first paper* detailed nine cases in which the only treatment was subcutaneous injections of ergotin.

Case 1—Fibroid, as large as a child's head. Disappeared at the end of six months.

Case 2—Same size. Disappeared in six months.

Case 3—Twice the size of a man's head. Reduced in six months to the size of a hen's egg.

History of other cases similar. The second paper* has been published recently—19 cases given. In six, removal of the symptoms and diminution of the size of the uterus. In eleven, but little was accomplished in the diminution of the tumor, but *material* improvement in the symptoms. In two cases, no favorable influence was exerted on the tumor or on the symptoms. The theory of the action is that ergotic contraction of the uterus suspends the nutrition of the tumor, and fatty degeneration takes place. This method has now been so far tested that it certainly promises better results than any other in these cases.

CERVIX UTERI.

Being very accessible, the os and vaginal portion of the

*American Journal of Obstetrics, 1872.

*American Journal of Obstetrics, 1875.

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cervix uteri have been more frequently subjected to treatment than any other portion of the uterus. The greatest improvement which I note here is the disposition to abandon the more powerful caustics, and to rely on the milder forms of medication. Of the medicines which I have employed in abrasions and ulcerations of the cervix, and in inflammation of the cervical glands, I prefer zinc. sulph. It is not a panacea, but in my hands it has proved more beneficial than any other remedy. There is a disease of the cervical glands which Dr. Thomas* attributes to inflammation, and for which he recommends "destruction and ablation of the diseased glands, by means of Sim's curette for the radical cure." This condition has been met with by every gynecologist of much experience, and such cases may prove "very obstinate." I have succeeded in curing these obstinate cases by the use of zinc. sulph. In cases in which a few applications of pulv. zinc. sulp., made every five or six days, do not prove effectual, slight scarification should precede the application. I cannot bring myself to believe that the destruction and ablation of these glands by the use of the curette is a justifiable procedure.

Dilatation with Sponge or Laminaria Tents.—Three cases of death have been reported recently from dilatation of the cervix uteri with tents. In each case the unfavorable symptoms supervened after the *third tent* was used. I have had very unfavorable symptoms to come on after using the *third tent* on consecutive days—as febrile irritation, soreness, &c., and in two cases metro-peritonitis, in which recovery occurred after a painful and protracted illness in both. I have not seen any bad symptoms from the *first* tent, and no great amount of trouble from *the second*, except soreness, &c. I never use the third tent now on consecutive days.

INTRA UTERINE MEDICATION.

This subject has been most earnestly and freely discussed

*Diseases of Women, 1874.

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recently by leading gynecologists, both in this country and in Europe. Since the important papers of Dr. J. C. Nott,* Dr. E. R. Peaslee,† and Dr. F. D. Lente‡ were published, more general attention has been directed to it. There is not yet entire unanimity of opinion in regard to the safety and importance of topical applications to the endometrium. In the discussion of Dr. Nott's paper in the Medical Society of the County of New York,§ Dr. T. G. Thomas was emphatic in his condemnation of the practice. In his recent work, Diseases of Women (1874), he says: "Our chief hope of affording relief (*chronic corporeal endomitritis*) must rest upon the general measures just mentioned (good diet, fresh air, &c., with medicinal tonics), and *upon the direct application to the diseased surface of alterative remedies.*" Dr. Barnes (Diseases of Women, 1874,) says: "Topical applications to the diseased membrane (chronic endomitritis) are in many cases essential to the cure." Dr. Graily Hewitt (Diseases of Women, 1874,) says: "The favorable result is *attributed* to intra-uterine topical applications (chronic endomitritis), but the result is sufficiently explained by the *dilatation*, which, by *straightening* the canal, renders it thoroughly patent, and allows of the escape of the secretion; the retention of secretion does not then occur. For a time, in many cases permanently, the cure is complete. My interpretation of the facts is borne out by the fact that without employing intra-uterine topical applications, I have found these affections removed *by the straightening process alone.* Two methods of intra-uterine medication have been proposed, viz: *Ingestion* and *injection*, and each of these has its advocates. Dr. Thomas Kammerer and others favor injections; Dr. Peaslee thinks it is far better to ingest the remedy to be applied. Dr. J. Whitehead,‖ in a paper on this subject, suggests that *fluids* may be

*New York Medical Journal, June, 1870.
†New York Medical Journal, July, 1870.
‡New York Medical Journal, September, 1870.
§New York Medical Journal, August, 1870.
‖British Medical Journal, 1873.

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carried into the peritoneum by capillary or ciliary action. He prefers the use of solid or unctuous substances." Barnes says: "A most precious way of applying astringents, caustics, solvents or alteratives to the interior of the uterus, is in the form of ointment or pasma. In this way almost any substance may be applied. Where grease is objectionable as a vehicle, a pasma of suitable consistence may be made by glycerine or other substances. In this form we may use remedies which cannot easily be used in any other way. For example, we can hardly use bromine or iodine or mercury in a solid shape, and to use them in a liquid form is open to the objections already discussed. Almost anything can be made into an ointment or pasma, and we thus get a complete practical command over a large range of useful agents." A synopsis of precepts to be observed in intra-uterine medication, compiled from Peaslee, Thomas and Barnes:

1. Secure free dilation of the cervix uteri.
2. Use a very small quantity of fluid—not more than one drachm to two drachms—before allowing it to return.
3. Inject without *force and very slowly.*
4. Use a double canula to secure a return current.
5. The temperature of the fluid should be 85 deg. or 90 deg.
6. Be sure there is *no air in* the syringe.
7. Keep the patient in bed until after all discomfort passes off which is caused by the treatment. Upon the occurrence of pain use morphia hypodermically.
8. Never make applications just before or just after a menstrual period. No precautionary measures can ever render applications to the cavity of the uterus, either by ingestion or by injection, entirely free from danger. Injection is certainly the more hazardous method. My own experience leads me to employ this treatment only as a dernier resort.

FLEXIONS AND VERSIONS

are now almost universally treated by straightening and repositing the organ and applying a pessary. Several kinds

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have been invented, but the most popular one is Hodge's lever and the various modifications of it. Dr. T. G. Thomas has recently invented *stem* pessaries, which have succeeded so well in his hands that he recommends their employment with proper precautions.

INVERSION OF THE UTERUS.

This accident is certainly becoming more common, if we may judge from the number of cases reported in the last year or two.

Dr. J. P. White's repositor for the relief of this accident has been employed with great success. (See N. A. Journal of Medical Science, January, 1875.) The instrument is figured in the new edition of Thomas, p. 439.

THE ASPIRATOR.

This instrument is becoming very important in the diagnosis, and treatment of many diseases with which the gynecologist has to deal.

There are many other important subjects which it would give me pleasure to report on, if the limits of a paper of this kind would permit. I have selected those which I have deemed of most interest to the profession in the State.

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LITHOTOMY;

AND WOUND OF THE BRAIN.

BY JAMES GUILD, M. D.

I will premise, by saying that during my long practice of medicine, I have performed the operation of Lithotomy seventeen times, and am happy to state that success attended every instance. Most of the cases were the lateral operation with the gorget, as taught by my old preceptor, Dr. Dudley. There is some stir among Lithotomists, both in this country and in Europe, in regard to the operation being performed on the median line; or the median operation, as it is called. I hope I may not be considered egotistical, when I say I claim priority in the median operation; though I do not claim any credit whatever in the operation, as it was through great necessity I first operated on the median line.

The case was a little boy in an adjoining county. In proceeding to the operation, I was much disappointed in not being able to introduce the staff into the bladder, not having with me one sufficiently small to pass through the urethra. After using all diligence for three hours, with the aid of anæsthetics, I was defeated in my purpose, and had come to the conclusion to give up the case; but knowing the little fellow would soon fall a victim to the malady, I made an incision, mostly on the median line, into the groove of the staff, the extremity of which being in contact with the prostate gland. I then introduced a small pocket-case director into the groove of the staff, then withdrawing it, readily entered the bladder, and with a sharp pointed bistoury made quite a slight opening partly through the neck of the bladder; by patient dilatation with the finger entered the bladder without difficulty,

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making room sufficiently large to admit the forceps, and extracting a stone of ordinary size. Recovery took place without any untoward symptoms.

I have since operated by making quite a small opening on the median line into the neck of the bladder, then relying on dilatation, by gradual pressure with the finger, which yields readily, so as to extract any ordinary sized stone.

Prof. Rizzole, of Italy, is the only surgeon, I am aware of, who ever performed the median operation before myself, and his operation was not known to me when I first operated on the median line; hence, I presume to claim priority in the operation. I may remark, that had I not met with the difficulty I did, in the introduction of the staff, with the little boy, I would not have operated as I did.

The median operation has many advantages over all others. In the first place, a too great an incision through the neck of the bladder, by the lateral or bilateral operation, endangers the vesical reflection of the pelvic fascia, thereby allowing the urine to insinuate itself into the surrounding cellular tissue, and into the peritoneal cavity. Secondly, incontinence of urine is prevented. Thirdly, infliction of injury upon the seminal ducts, thereby producing sterility, is obviated. I strongly recommend and favor the median operation, as it is an operation attended with little or no danger.

I will now relate very concisely an interesting case of

WOUND OF THE BRAIN.

Col. D. H. B., in an affray with a distinguished ex-member of Congress, received a wound on the occipital bone with a spear from his sword-cane. Soon after, he was attacked with epilepsy, which continued to increase in intensity for two years, notwithstanding all the medical aid that could be instituted was applied. It so happened that the combattants, some two years after the affray, met in Tuscaloosa, made friends, and retired to a saloon to take a social glass together. Excuse me for relating the incident as it occurred. Before or

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about taking their beverage, the Congressman observed, "Col., (with an oath) there is a piece of my sword-cane in your brains." The Col. asked for an explanation. He was informed that "after the fight, I discovered that the point of my sword-cane was broken off; and to a certainty it is in your brains." The Colonel, without taking his glass of liquor, made haste to my office, and related to me what had just occurred. It struck me immediately it was all true, and that it was the cause of the fits.

On making an examination, I found a slight protuberance on the occipital bone, which he informed me occasionally issued a little matter. I immediately shaved off the hair, made a transverse incision, exposed the bone, and found the spear broken off even with the skull. I thought of trepanning over the spear in order to liberate it, but procured a common hand-saw file, and filed away the skull on each side of the spear so that I could get hold of it with the forceps. Accordingly, I used a pair of tooth-forceps and succeded in extracting the spear, which, by measurement, entered the brain about one inch. It was the last of his convulsions.

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A CASE OF TRIPLE BIRTH.

BY R. COLEMAN, M. D., ATHENS, ALA.

Mrs. R. was taken with slight symptoms of labor, March 15th, at 3 A. M. At 10 A. M., having had only two or three strong pains, a girl was born by a vertex presentation. She now became entirely easy, and continued so until 2½ P. M., when slight pains came on. Half an hour afterwards, the waters broke a second time, followed by another girl, vertex presenting. There was not time to take away this one, before a boy came, presenting by the breech. The head stopped for a minute, but I had the good fortune to get it away, and it soon began to breathe.

The first child was attached to a very small placenta. The boy and girl born last were in a sack together, and had an ordinary sized placenta.

Mother and children all did well.

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HISTORY OF THE SMALL-POX EPIDEMIC

IN THE CITY OF MOBILE, 1874–75.

TO WHICH ARE ADDED

MORTUARY AND METEOROLOGICAL TABLES, FOR THE YEAR 1874.

BY JEROME COCHRAN, M. D., OF MOBILE.

SUMMARY OF CONTENTS.—Introduction—Epidemic of 1874–5—Tabular Statements—Commentaries and Reflections—Comparative Mortality of Whites and Blacks—Relations of Small-pox to the Seasons of the Year—The Contagium or Specific Virus of Small-pox—Hypothesis of Dr. Beale—The Vegetable Parasite-Hypothesis—The dissemination of Small-pox—The Prophylaxis of Small-pox—Isolation—Disinfection—Vaccination—Dangers of Vaccination—Vaccinal Syphilis—Erysipelas and Phagedena—Tetanus—Exanthemata—Problems in Vaccination—Re-vaccination—Vaccination after Exposure—Vaccination during Pregnancy—Vaccination of Infants—Vaccination as a Test of Protection—The time necessary to secure Vaccinal Protection—The Anatomy and Physiology of the Vaccine-Vesicle—The Comparative value of Lymph and Crust—The Comparative Value of Humanized and Bovine Virus—The Curiosities of Vaccination—The Board of Health—Plan of Action—Instructions to Vaccinating Physicians—Instructions for Disinfection—Financial Statement—Mortuary Statistics of Mobile for the year 1874—Meteorological Tables for 1874—Notes and Reflections—Note A, Diptheria—Remarks on Diptheria by Dr. Gaines—Typho-malarial Fever—Appendix—Health-Ordinance.

INTRODUCTION.

During the last ten years—that is to say, since the close of the war between the States—there have been in Mobile two epidemics of Small-pox. The first of these occurred in 1865–66; the second in 1874–5.

Of the first of these epidemics—and of such subsequent

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visitations as failed to attain epidemic dimensions—I shall have but little to say. Of the epidemic of 1874–5, which is just now declining, it is my purpose to give the history *in extenso.*

The number of cases in the epidemic of 1865–6 was never known, but probably reached five or six hundred. The number of deaths amounted to one hundred, which were distributed among the several months of the epidemic year as follows:

1865	November	2
	December	8
1866	January	16
	February	21
	March	24
	April	17
	May	7
	June	3
	July	0
	August	0
	September	2
Sum total		100

After the subsidence of this epidemic, the city remained free from Small-pox until 1872, when four cases occurred—one in February, two in March, and one in April. These cases were all brought into the city from abroad during the stage of incubation, the disease developing itself some time after their arrival. Two were confluent, and two discrete. They all recovered. In every instance the patient was removed to the Pest-house as soon as the character of the attack was ascertained; the aid of vaccination and disinfection was invoked, and no additional cases followed.

Again, in the summer of 1873, several cases of small-pox were brought into the city at various times, and the disease spread, I believe, to the extent of about thirty cases. The most of these were transferred to the Pest-house, where several of them died; but there were no deaths from this cause

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during this season within the city limits. No record was kept of the facts of this visitation, and I am able to give only these general statements in relation to it.

THE EPIDEMIC OF 1874–5.

Of the first cases of small-pox which occurred in Mobile in 1874, I am able to state neither the date of their appearance, nor the sources whence they were derived, nor the relations in which they stood towards the subsequent epidemic. During the spring and the summer months, and up, indeed, to the month of November, no record of cases was kept, except the record of deaths; and as the number of deaths was small during the continuance of warm weather, there was not excited in the public mind any apprehension of approaching danger. If the city had been under competent sanitary administration, the danger would of course have been seen from the beginning, and the proper measures would have been taken to arrest its progress. But the people of Mobile had not learned to understand the importance of having the sanitary supervision of the city conducted by sanitary experts; the municipal authorities had chosen to repeal the Health-Ordinance of 1871, and to dispense, almost contemptuously, with the services of the Board of Health; and so it happened that no effort was made to extinguish the fires of infection until the pestilence had swelled into epidemic dimensions.

At length, however, when the pestilence had already gained admission into every quarter of the city, and when the danger had assumed such portentious proportions as to make it impossible that it should any longer be overlooked, then, by common consent, the people appealed for help to the Board of Health; and the Board of Health, true to the unselfish spirit of the medical profession, placed themselves in the breach, and undertook to suppress the epidemic.

The pestilence at first made slow progress. There is even reason to believe that it was several times introduced, and that it several times spontaneously disappeared, before it at length made a permanent lodgment amongst us. Although we

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have no particular account of these earlier cases, there can be no question that they were imported from New Orleans, with which city we are in daily communication; and where the small-pox has maintained its ground ever since 1869, in defiance of times and seasons and all the assaults that have been made upon it.

There was at least one case in the city in April. We have no account of any case in May. June and July each furnished one known case; August and September each three known cases; while in October the number of known cases swelled up to thirty-three (33). I say known cases, because it is quite certain that a considerable number of cases occurred during these months which have escaped discovery; so that while we have been able to trace but forty-two (42) cases before the first of November, I have little doubt that the real number was somewhere in the neighborhood of sixty (60) or seventy (70).

Be this as it may, the pestilence had been neglected until it had gained a terrible advantage. Up to the first of November not less than forty (40) houses had been invaded. These were scattered from one extremity of the city to the other; and from each one, as a focus of infection, the seeds of pestilence were scattered over the adjacent neighborhood. They fell upon generous soil, and under the influence of favorable weather they sprang up into malignant life and bore abundant fruit.

During the first weeks of November the progress of the pestilence became so rapid as to occasion general alarm, and it was now that the Board of Health was invoked to lend its assistance. It organized on the 12th of the month, and on the 13th it had already taken the field against the enemy, and had some twenty agents—vaccinating physicians, clerks and police-inspectors—regularly at work.

Of course it took some time for this work to begin to manifest itself in beneficent results. By the end of the month two hundred and ninety-three new cases had occurred, besides such as remained over from October; and one hundred

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and eighty-five houses were known to be infected. It was now that the pestilence had reached its maximum of prevalence, both as to the number of coexisting cases, and also as to the number of infected places. After this it continued slowly but surely to decline, and each succeeding month presented a shorter list of cases and a diminished number of infected centers, until at the beginning of April, it ceased to be epidemic in any quarter of the city, although sporadic cases continued to occur for sometime longer.

The principal facts of the epidemic of a statistical character will be found in the subjoined tables.

Table of infected places for each month during the epidemic:

1874—	April	1
	June	1
	July	1
	August	3
	September	3
	October	31
	November	185
	December	168
1875—	January	116
	February	93
	March	60
	April	15

These numbers added together would give the sum total of 677; but the number of places infected was considerably less than this, because in many instances the same house continued to be infected from one month to another, and such houses have been counted in the foregoing table more than once. The real number of infected houses, as will be seen from the next table, was 614.

Table of infected houses, arranged according to the number of cases occurring in them severally:

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Number of houses in which			1 case	occurred	438
"	"	"	2 cases	occurred	83
"	"	"	3	"	43
"	"	"	4	"	23
"	"	"	5	"	10
"	"	"	6	"	11
"	"	"	7	"	4
"	"	"	10	"	1
"	"	"	11	"	1
Whole number of houses infected					614
Whole number of cases					990

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Summary statement of the number of small-pox cases and deaths in Mobile in the Epidemic of 1874–5, arranged according to months, colors and sexes:

PRIOR TO NOVEMBER, 1874.	Whole No. Cases.	Males	Deaths	Recoveries	Females	Deaths	Recoveries
Whites	12	4	2	2	8	4	4
Blacks	20	5	4	1	15	13	2
Mulattoes	10	6	5	1	4	...	4
Totals	42	15	11	4	27	17	10
NOVEMBER.							
Whites	80	39	7	32	41	10	31
Blacks	173	78	18	60	95	22	73
Mulattoes	40	20	5	15	20	3	17
Totals	293	137	30	107	156	35	121
DECEMBER.							
Whites	79	44	9	35	35	7	28
Blacks	133	67	23	44	66	19	47
Mulattoes	41	17	4	13	24	4	20
Totals	253	128	36	92	125	30	95
JANUARY, 1875.							
Whites	29	14	4	10	15	...	15
Blacks	97	50	22	28	47	12	35
Mulattoes	16	8	2	6	8	2	6
Totals	142	72	28	44	70	14	56

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Statement Small-Pox cases in Mobile in 1874–5—Continued.

FEBRUARY, 1875.	Whole No. Cases.	Males	Deaths	Recoveries	Females	Deaths	Recoveries
Whites	30	20	8	12	10	1	9
Blacks	90	58	18	40	32	6	26
Mulattoes	17	9	2	7	8	1	7
Totals	137	87	28	59	50	8	42
MARCH.							
Whites	15	9	2	7	6	3	3
Blacks	78	31	8	23	47	7	40
Mulattoes	18	7	1	6	11	...	11
Totals	111	47	11	36	64	10	54
APRIL.							
Whites	3	1	1	...	2	...	2
Blacks	6	3	1	2	3	...	3
Mulattoes	3	...	...	..	3	2	1
Totals	12	4	2	2	8	2	6

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Summary statement of the number of Small-pox Cases and Deaths, in Mobile in the Epidemic of 1874–5, arranged according to Months, Colors, and Ages.

PRIOR TO NOVEMBER, 1874.	Under 5 years	Deaths	Recoveries	5 to 20 years	Deaths	Recoveries	20 to 40 years	Deaths	Recoveries	Over 40 years	Deaths	Recoveries
Whites	2	..	2	7	4	3	1	..	1	2	..	2
Blacks	6	5	1	6	6	..	7	6	1	1	1	..
Mulattoes	2	1	1	2	..	2	5	1	4	1	1	..
Totals	10	6	4	15	10	5	13	7	6	4	2	2
NOVEMBER.												
Whites	14	2	12	27	8	19	29	8	21	10	1	9
Blacks	47	7	40	55	11	44	50	17	33	21	6	15
Mulattoes	8	..	8	19	3	16	8	2	6	5	2	3
Totals	69	9	60	101	22	79	87	27	60	36	9	27
DECEMBER.												
Whites	17	4	13	25	4	21	20	3	17	17	6	11
Blacks	26	3	23	52	14	38	47	18	29	9	4	5
Mulattoes	12	4	8	13	1	12	11	3	8	5	1	4
Totals	55	11	44	90	19	71	78	24	54	31	11	20
JANUARY, 1875.												
Whites	8	1	7	10	1	9	10	1	9	1	1	..
Blacks	27	8	19	31	6	25	30	14	16	9	5	4
Mulattoes	6	..	6	3	2	1	4	1	3	3	2	1
Totals	41	9	32	44	9	35	44	16	28	13	8	5

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Statement of Small-pox Cases in Mobile, 1874–5—Continued.

FEBRUARY, 1875.	Under 5 years	Deaths	Recoveries	5 to 20 years	Deaths	Recoveries	20 to 40 years	Deaths	Recoveries	Over 40 years	Deaths	Recoveries
Whites	4	2	2	18	4	14	6	1	5	2	2	..
Blacks	18	3	15	29	8	21	30	10	20	13	3	10
Mulattoes	9	1	8	6	..	6	2	1	1	..	..	..
Totals	31	6	25	53	12	41	38	12	26	15	5	10
MARCH.												
Whites	4	2	2	1	..	1	8	2	6	2	0	2
Blacks	20	4	16	23	3	20	29	10	19	6	2	4
Mulattoes	6	1	5	5	..	5	6	..	6	1	0	1
Totals	30	7	23	29	3	26	43	12	31	9	2	7
APRIL.												
Whites	..	..	..	1	..	1	2	2	..	..	..	..
Blacks	2	..	2	4	1	3	..	..	..	..	..	..
Mulattoes	..	..	..	2	1	1	1	1	..	..	..	..
Totals	2	..	2	7	2	5	3	3	.	..	..	..

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RECORD OF CASES TREATED IN THE SMALL-POX HOSPITAL.

PRIOR TO NOVEMBER, 1874.	Whole No. Cases.	Males.	Deaths.	Recoveries.	Females	Deaths.	Recoveries.
Whites	2	2	..	2	.	..	..
Blacks	15	7	3	4	8	4	4
Mulattoes	..	..	..	..	..	..	..
Totals	17	9	3	6	8	4	4
NOVEMBER.							
Whites	10	5	1	4	5	2	3
Blacks	28	15	7	8	13	7	6
Mulattoes	..	..	..	..	..	..	..
Totals	38	20	8	12	18	9	9
DECEMBER.							
Whites	9	4	2	2	5	2	3
Blacks	18	14	10	4	4	4	..
Mulattoes	5	4	3	1	1	..	1
Totals	32	22	15	7	10	6	4
JANUARY.							
Whites	7	4	2	2	3	1	2
Blacks	18	15	7	8	3	1	2
Mulattoes	2	1	1	..	1	..	1
Totals	27	20	10	10	7	2	5

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Record of Cases treated in Small-pox Hospital—Continued.

FEBRUARY, 1875.	Whole No. Cases.	Males.	Deaths.	Recoveries.	Females.	Deaths.	Recoveries.
Whites	2	1	..	1	1	..	1
Blacks	12	5	2	3	7	2	5
Mulattoes	..	..	..	..	..	..	..
Totals	14	6	2	4	8	2	6
MARCH.							
Whites	.	..	..	..	..	..	..
Blacks	9	6	4	2	3	2	1
Mulattoes	..	..	..	..	..	..	..
Totals	9	6	4	2	3	2	1
APRIL.							
Whites	1	1	1	..	..	..	..
Blacks	3	..	..	..	3	..	3
Mulattoes	..	..	..	..	..	..	..
Totals	4	1	1	..	3	..	3

Whole number of Cases treated in the Pest-house.....141
" " Whites " " " 31
" " Blacks " " " 103
" " Mulattoes " " 7
" " Deaths..... 68
Percentage of Deaths to Cases.....48.22

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General Summary of the foregoing Tables, with the percentage of Deaths of the several Classes.

Total No.	Cases	990,	deaths,	262,	percentage,	26.46
"	Whites	248	"	58	"	23.34
"	Blacks	597	"	173	"	28.98
"	Mulattoes	145	"	31	"	21.37
"	Colored	742	"	204	"	27.49
"	Males	490	"	146	"	29.79
"	Females	500	"	116	"	22.22
"	White Males	131	"	33	"	25.19
"	White Females	117	"	25	"	21.36
"	Black Males	292	"	94	"	32.19
"	Black Females	305	"	79	"	25.90
"	Cases under 5 yrs.	238	"	48	"	20.16
"	" bt. 5 & 20 yrs.	338	"	76	"	22.48
"	" " 20 & 40 "	306	"	101	"	33.00
"	" above 40 "	108	"	37	"	34.25
"	" Vaccinated	421	"	88	"	20.90
"	" not vaccin'd	505	"	131	"	25.94
"	" not reported	64	"	43	"	67.18
"	" Unvaccin'd	569	"	174	"	30.58

COMMENTARIES AND REFLECTIONS.

The real magnitude of this epidemic of small-pox may be judged of by comparing it with our recent epidemics of yellow fever.

This comparison can be made only in relation to the mortality which has attended our several epidemics, because in none of our yellow fever epidemics, except that of 1873, has any record been kept of the number of cases. It will be seen from the foregoing tables, that we have upon our list of the small-pox epidemic of 1874-5 the names, dates and histories of nine hundred and ninety cases of small-pox. The most strenuous efforts were made to have the records as complete as possible, and I do not hesitate to assert that from the time when the disease became epidemic up the time of its total

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extinction, very few cases indeed escaped discovery, and that for all practical purposes the record of cases may be considered as complete. Still, it is not to be doubted that a small number of cases managed during this time to escape observation; still less is it to be doubted that a small number of cases occurred before the Board of Health commenced operations, of which we were subsequently unable to obtain any information; and this, notwithstanding the fact that active and intelligent agents of the Board were engaged for weeks in hunting up these old cases. It is certain, therefore, that the number of cases was somewhat greater than the nine hundred and ninety included in the tables. It was greater perhaps by forty or fifty cases.

While this small margin of uncertainty as to the total number of cases must be allowed to stand, the statement of the mortality is fixed and definite, namely, two hundred and sixty-two, or a little more than twenty-six per centum of the cases.

I estimate the white population of Mobile at about twenty-four thousand; and the aggregate of blacks, mulattoes, and creoles, at about twelve thousand. This gives a total population of thirty-six thousand. We have, therefore, for the comparison which we desire to make, the following summary statement of the facts and figures of the epidemic:

Total population	36,000
Whole number of cases	990
Whole number of deaths	262
Percentage of cases to population	2.77
Percentage of deaths to cases	26.46

Compare this with the corresponding details in relation to the yellow fever epidemic of 1873, namely:

Whole number of cases	200
Whole number of deaths	30
Percentage of cases to population	0.55
Percentage of deaths to cases	15

In other words, our recent epidemic of small-pox was of

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five times the magnitude of our yellow fever epidemic of 1873, when comparison is made as to the number of cases; and of nearly nine times the magnitude of that epidemic, when comparison is made as to the number of deaths.

We have indeed had but one epidemic in Mobile since the war that rivals our late visitation of small-pox, and this is found in the yellow fever epidemic of 1870, in which the deaths were in number two hundred and fifty-two, and the number of cases, calculated on the presumption of a mortality of fifteen per centum, something more than sixteen hundred, (1670).

COMPARATIVE MORTALITY OF WHITES AND BLACKS, ETC.

If we compare the number of white cases with the number expressing our white population, the ratio is that of 248 to 24,000, equal to a very small fraction over one per centum (1.04).

If we compare in the same way the number of cases occurring among our blacks, mulattoes and creoles, with the aggregate number of our colored population, the ratio is that of 742 to 12,000, equal to a little more than six per centum (6.04).

In other words, while the whites suffered to the extent of one case to every hundred of our white population, the blacks, including mulattoes and creoles, suffered to the extent of six cases to every hundred of our colored population; so that there occurred among the blacks absolutely three times as many cases as among the whites, and relatively six times as many.

How does this wide disparity in the percentage of cases in the two races originate? Is it the result of constitutional disparity of susceptibility? Or, is it the result of disparity in social surroundings and habits of life? From the observations which I have been able to make I am satisfied that both of these factors contribute to the result.

It has long been known that there is a wide difference of toleration and susceptibility exhibited by different races of men towards different diseases. It is well established that

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the liability of the negro to yellow fever is much less than that of the white man. Indeed it was held at one time that the negro was virtually proof against the infection of the yellow fever; and a distinguished Southern physician—Dr. J. C. Nott, in "Indiginous Races of the Earth,"—gave it as his opinion that the infusion of even one-fourth of negro blood is as efficient a protection against yellow fever as vaccination is against small-pox. And notwithstanding the occurrence of considerable numbers of cases of yellow fever among our Southern blacks and mixed bloods in our recent epidemics, I am not prepared to say that his statement is too strong.

It has also been known for a long time that the negro's liability to small-pox is much greater than that of the white man, thus, by a sort of poetical justice, reversing the rule which applies to yellow fever. But I am not aware that any effort has been made to give to this difference of susceptibility any precise numerical expression. And of course, without a very wide field of observation under very special circumstances, any expression of this sort must be extremely vague—can amount, indeed, to but little more than the expression of a mere opinion. But even opinions are sometimes of considerable value. I therefore venture to express the belief that the constitutional susceptibility of the negro to small-pox is about twice as great as the constitutional susceptibility of the white man to the same disease; and I am satisfied that this estimate is a high one, and rather above than below the truth. If we accept this as the basis of calculation, it follows that in Mobile during our recent epidemic the social surroundings and habits of life of the negro were three times as favorable for the dissemination of small-pox as those obtaining among our white population. Can the difference really have amounted to so much? I think so. The two separate elements of the problem which are of greatest importance may be briefly mentioned:

1. The negroes were much less adequately protected by vaccination than the whites.

2. They availed themselves of the advantage resulting from

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the separation of the sick and the well to much less extent than the whites did, and thus their immediate exposure was much greater.

The neglect of vaccination was very general among the negroes before the advent of the pestilence, and continued to obtain even after it had commenced its depredations. It grew out of their general improvidence, stolid indifference, and recklessness of consequences. Besides this general neglect of vaccination, large numbers of them manifested the most violent opposition against it, and resorted to every means of evasion which they were able to practice, when it was brought to their doors and offered to them without money and without price. Some of their leading objections I will proceed to mention:

1. Many of them professed to believe that it was a device of the white people to spread the small-pox among them with the malicious purpose of destroying the race as rapidly as possible. The reasons for this belief seemed to be these: That the whites were the natural enemies of the blacks anyhow, and were anxious to get rid of them; that small-pox quite frequently occurred in persons who had been vaccinated but a few days before, whence, upon the principle of *post hoc ergo propter hoc*, they argued that the vaccination and the subsequent small-pox stood to each other in the relation of cause and effect; and finally, that, so much disinterested benevolence being altogether incredible, the Board of Health must mean mischief.

2. Others had heard wonderful stories of the dangers of vaccination; that dozens and dozens had lost their arms from it; that a good many had lost their lives from it; while so many had been permanently disabled by it, that it was not worth while to try to estimate them all.

3. Others objected more reasonably that themselves and their families were dependent upon their daily labor for their daily bread, and this in so rigorous a fashion that they could not lose even a few days from work without suffering.

As the result of these various considerations, and of a gen-

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eral asinine obstinacy which rejected all expostulation as insulting, they seemed to engage in a sort of tacit conspiracy not to allow either themselves or their families to be vaccinated as long as they could in any way avoid it. They would falsely assure the vaccinating physicians that they had been vaccinated already, or that they had varioloid a few years ago, when not a mark of either was to be found upon their persons. They would discover the vaccinating physician while he was coming along the street, or while he was engaged in an adjacent house, and a general stampede would ensue. They would run off to some other part of the town; or failing in this, would hide themselves in all sorts of out-of-the-way places, under the beds, up in the lofts, out in the privies—anywhere to get out of sight.

When they were finally cornered and caught and forced to submit, many rare and racy scenes occurred. The children would struggle and scream as if they were being flayed alive. The men and women would indulge in every variety of insolence and bravado, and mutter out such threats and ejaculations as these: Well! you can put that stuff in my arm if you want to, but you can't make it stay there. I'll wash it off with soap and water. I'll scour it off with sand. I'll scrape it off with a knife. What do you want to give me the small-pox for? I don't want that *pisen* put in me to rot my arm off. Where did you get that stuff anyhow? Out of the pest house? Sometimes they were still more obstreperous than this, and resisted the physicians and policemen employed by the Board of Health with clubs, knives, axes, and even with boiling water.

As a rule, the appearance of a policeman would secure the sullen submission of all who could be found. But a few would sometimes continue defiant, and these were arrested and marched off to the guard house. Very few were actually locked up. Most of those arrested would conclude before reaching the guard house that prudence was the better part of valor, and have themselves vaccinated and turned loose. Others would come to terms when they were arraigned before

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the Mayor, and allowed the alternative of vaccination or imprisonment. Those who still remained obdurate against all other arguments were locked up—a sort of persuasion to which they always yielded in a day or two. No record was kept of the number of arrests. I suppose they amounted to about two hundred. Of these perhaps thirty had to be taken before the Mayor; while the number actually imprisoned must have been somewhat less than a dozen.

Besides these obstreperous cases, a great many escaped vaccination in other ways. When the vaccinating physicians would visit a house it frequently happened that several members of the family would be away from home. The men would be off at work; the women would be out washing; the children would be at school, or off at play, or gone a fishing. In this way many were overlooked, and this even when several visits had been made to the same house.

Not less remarkable than the antipathy of these people to vaccination, were their gregarious habits, and their promiscuous intercourse with small-pox houses and small-pox patients. This was often to some extent a matter of necessity. A whole family of them might have but one room, and they would all have to live and sleep in that, or else stay out of doors. Or if they had two or three rooms, the weather might be so cold as to require fires, and they were often so poor as to be quite unable to keep up more than one fire. It would not answer to put the small-pox patients in cold rooms, and so the natural result was that the whole family, sick and well, men, women and children, would crowd into the room where the fire was; no matter if the atmosphere that filled it was reeking with the poison of small-pox.

But this huddling together of the sick and well was not always due to this sort of sorrowful necessity. Very often, indeed, it could have been easily avoided. But there seemed to be an irresistible fascination in a case of small-pox, and in the atmosphere of mystery and danger which surrounded it, which caused all the idlers in the neighborhood to flock about it like moths about the flame of a candle. The women

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would go and sit in the way for hours, smoking and gossiping; the men were naturally drawn to keep company with the women; and the children could not be left at home by themselves, besides having an inordinate curiosity of their own to gratify. And so it was that the rooms infected with small-pox became, in many instances, the most popular places of social resort. When expostulated with for this senseless and reckless imprudence, they exhibited the most stolid indifference, and along with it a stupid sentiment of thoroughgoing fatalism or predestination, the usual answer being to this effect: Well! what is for me is for me. If the Lord wants me to have the small-pox, I will have it anyhow, and there is no use to try to run away from it.

The mortality of the epidemic was an eloquent indication of the malignant type exhibited by the disease. It reached more than one-fourth of all who were attacked, a mortality far greater than that of any of our yellow fever epidemics for the last twenty years.

While males and females were attacked in about equal numbers, the mortality was much greater among the males, exceeding that among the females by more than seven and a half per centum. This difference is due chiefly, if not altogether, to the fact that among the class of people who suffered most severely, the women are better cared for than the men, are more likely to have comfortable rooms and beds, and are also more liable to take sick at home.

The tables also show another fact of considerable interest, namely, that the percentage of mortality increases *pari passu* with the ages of the patients, being twenty per centum for children under five years, and rising gradually to thirty-four per centum for adults over forty.

THE RELATIONS OF SMALL-POX TO THE SEASONS OF THE YEAR.

A curious subject of inquiry, interesting in itself and important on account of its relations to practical hygiene, is found in the climatological and meteorological relations of small-pox—that is to say, in its relations to the several sea-

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sons of the year and to atmospheric humidity and temperature. It is a subject, too, about which much difference of statement has been made by different writers and observers. It seems strange, indeed, that after so many epidemics have for so many centuries desolated the earth there should remain any doubt as to whether it was most prevalent in summer or in winter—whether warm or cold weather is most favorable for its development and dissemination. But as yet these questions can by no means be regarded as definitely settled.

A considerable number of European authorities express the opinion that the disease is of greatest prevalence in the summer; other authorities, both European and American, assert that changes of season and variations of temperature are without appreciable influence upon it; while amongst our Southern physicians I think there is a a very general impression that our long and hot summers are far less favorable to its dissemination than our mild and humid winters.

For facility of comparison, I quote here the statements of several prominent writers:

Boerhaave, whose name is inseparably associated with the secular history, and with the natural history and pathology of small-pox, has this passage:

"*Est ut plurimum epidemicus, verno tempore primo incipiens, æstate crescens, languens autumno, hyeme sequente fere cendens, vere iterum eodem ordine redituru*s."—*Quoted by Copland in his Dictionary, vol. III., p. 903.*

Copland himself says:

"A high range of temperature, especially when conjoined with humidity, stillness, and impurities arising from animal or vegetable decomposition, both predisposes the frames of those who are subject to these causes and concentrates the poisonous miasms emanating from the sick, and spreads this miasm in a wider sphere." And he adds, in illustration, that—"In the Norwich epidemic of 1819 a few cases only were observed in the preceding winter, but the greater prevalence and mortality were in June and July. In Lynn, also, in the same

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year, small-pox was introduced in the winter, but did not spread with rapidity until summer."—*Dictionary, vol. III., p. 903.*

In a note on the same page of Copland's Dictionary, his American Editor, Dr. Charles A. Lee, expresses this opinion:

"At present there is every reason to believe that small-pox is independent of cognizable climatic conditions, such as temperature, density, and humidity of the atmosphere." He adds a table of statistics of mortality from small pox in the city of New York from 1816 to 1853, a period of thirty-seven years, as follows: January, 661 deaths; February, 531; March, 559; April, 309; May, 549; June, 380; July, 280; August, 243; September, 194; October, 269; November, 370; December, 521. Here the largest mortality is in January, the smallest in September. Arranging the deaths for the four seasons of the year, we have, in spring, 1217; in summer, 911; in autumn, 833; and in winter, 1713; showing the greatest mortality for winter, and a mortality successively decreasing for each of the succeeding seasons.

Curschman says:

"The season of the year has some influence on the course of epidemics; they are generally more dangerous in summer than in winter."—*Ziemsenn's Cyclopedia, vol. II, p. 393*

Mr. Marson, for a whole generation in charge of the London Small-pox Hospital, and the highest possible authority for London epidemics, sums up his large experience in these words:

"Epidemics of small-pox begin generally in London in the autumnal period of the year. The moist weather of the autumn seems to be favorable to the spread of the disease. When, however, it has once been set going, it continues often through all seasons of the year, quite uninfluenced either by the frosts of winter or the heats of summer."—*Reynolds' Practice, vol. I, p. 270.*

It will be seen from the authorities quoted, and their number could be increased to any desired extent, that the general *consensus* of medical opinion in Europe is to the effect that

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warm weather and the summer season are most favorable for the dissemination and epidemic prevalence of small-pox. It may be that in Europe this is true; but I am quite satisfied that it is not true in the United States; and especially that it is very far from true in that portion of the United States which borders upon the Mexican Gulf. In Mobile and in New Orleans, for example, there can be no question that the long hot summers prove almost fatal to the very existence of small-pox. This is very clearly shown in the following tabular statement of small-pox cases and deaths in New Orleans during the last five years:

Statement of Small-pox Cases and Mortality in New Orleans from 1871 to 1875.

MONTHS.	1871.		1872.		1873.		1874.		1875.	
	No. of Cases.	Deaths.	No. of Cases.	Deaths.	No. of Cases.	Deaths.	No. of Cases.	Deaths.	No. of Cases.	Deaths.
January	...	69	6	...	154	64	154	87	80	32
February	...	56	2	2	194	83	196	82	155	44
March	...	121	7	5	220	79	203	88	242	94
April	...	122	23	5	184	67	248	94	131	42
May	...	78	9	4	160	71	230	79	...	...
June	...	59	3	1	75	35	141	73	...	...
July	...	14	...	...	21	11	65	41	...	...
August	...	4	...	...	8	2	12	10	...	...
September	...	3	1	...	15	7	13	6	...	...
October	...	...	1	1	14	8	8	2	...	...
November	...	1	10	...	109	27	23	10	...	...
December	...	1	36	11	149	55	45	15	...	...
Totals	...	528	98	29	1303	509	1338	587	508	212

We may remark here, incidentally, upon the large percentage of mortality exhibited by these aggregates, namely, in

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1872, 29.59 per cent; in 1873, 38.29 per cent; in 1874, 43.87 per cent; in 1875, 41.73 per cent.

A mere glance at this table serves to show how the tide of the pestilence ebbs and flows in sympathy with the movements of the mercury in the thermometer-tube. During a continuous epidemic of five consecutive years we find the disease steadily declining during the hot months of every summer, until, by the time August is reached, it has almost wholly disappeared; then kindling into new life and wider prevalence in the cool months of autumn; reaching its widest dissemination and claiming its largest tribute of human lives in the cold months of winter and the beginning of the spring; and then waning again almost to extinction under the fiery influence of another summer's sun.

THE CONTAGIUM OR SPECIFIC POISON OF SMALL-POX.

The question of the earliest origin of small-pox is of the same nature as the question of the earliest origin of any species of animals or plants. While from the earliest periods of its historical existence its highly infectious and contagious character was recognized, it was also supposed that it could also arise spontaneously under certain circumstances of climate and soil, such as heat, humidity, filth, decaying organic matter, etc. The credit of overthrowing these crude conjectures, and of establishing upon firm ground the principle, that small-pox spreads exclusively by contagion, and is never spontaneously developed under any circumstances whatever, is usually ascribed to Boerhaave.

There is now no difference of opinion on this point among medical authorities, it being now unanimously conceded that small-pox is always disseminated by means of a specific virus which is begotten in the bodies of small-pox patients. There is nothing in the whole range either of demonstrative or of speculative pathology of more intrinsic interest than the study of the natural history of the specific poison of small-pox, with a view to the determination of its physical, chemical, and vital properties. It is the type and representative of a

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whole class of zymotic poisons, and it happens to be that one of the class with which we are most familiar. Let us see, then, what is the extent of our knowledge in reference to it.

We know, to begin with, that it is a material thing; because it can be carried from person to person and from place to place.

We know that it is living and organic, because it is endowed with the faculties of growth and reproduction, which belong exclusively to living matter.

We know that it must consist of solid particles, because living functions cannot be manifested by gases and liquids.

The more we study the nature and habits of the small-pox poison, the more necessary seems the conclusion that it consists of living organic germs of microscopic minuteness, endowed with the power of multiplying their generations under the sun, and finding their natural food and habitation in the fluids and tissues of human bodies.

Notwithstanding the very emphatic disclaimer of Curschmann, in Ziemssen's Cyclopedia, I think that the various observations and experiments on infectious fluids of Beale, Chauveau, Burdon-Saunderson, Ferdinand Cohn, and others, lend this *a priori* and theoretical conclusion valuable empirical confirmation. It is worth while, perhaps, to give some account of the researches here alluded to, although they must be more or less familiar to most medical men.

In 1863, Dr. Beale described and figured certain microscopic hyaline particles or granules which he had been able to demonstrate in vaccine lymph, and at the same time expressed the opinion that these granules were composed of germinal matter, and that in them was resident the contagious principle of vaccinia.

Afterwards, in 1865, in his microscopic study of the contagious fluids of the cattle-plague, he found minute transparent particles of a precisely similar character, and was led to believe that these constitute the germs of infection in this malady. I am not aware that Dr. Beale made any experiments to establish the correctness of his opinions, and can

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only presume that they were the results of hypothetical reasoning.

It was also in 1865 that Dr. Burdon-Saunderson endeavored, by the process of dialysis, to determine whether the infectious principle of the virulent fluids of cattle-plague is a colloidal or a chrystalloidal substance. Diffusing fluids known to be infectious and derived from plague-stricken animals, by the ordinary method through parchment paper, he found that the liquid which remained behind retained its activity, while the diffusate which had passed through the parchment was entirely innocuous. Inasmuch as colloids are not diffusible, he felt warranted to conclude from these experiments that the *contagium* of this disease is probably a colloidal substance.

In the meantime, Professor Chauveau, of the Veterinary School at Lyons, directed his attention to the nature of the contagious process in general, taking as the basis of his research an inquiry into the physical characters of vaccine. His first paper was published in 1865; his second paper in 1868.

It may be stated in general terms that mature vaccine lymph is composed of three parts differing from one another in physical properties. First, a transparent albuminous fluid; second, leucocytes analogous to pus-corpuscles or to the white corpuscles of the blood; third, of particles far inferior to these in size, not exceeding, indeed, the one-twenty-thousandth of an inch in diameter. Starting from these facts as to the physical constitution of vaccine lymph—facts which it is easy for any one to verify—the problem which Professor Chauveau proposed to himself was to determine experimentally whether it is in the leucocytes, or in the minute granules, or in the liquid medium, that the specific activity of vaccine virus is resident. It is easy to see that the principal difficulty in this investigation is to effect the preliminary separation of the three elements of the lymph.

The method of filtration is not available for the separation of the solid from the fluid portions of the lymph; because, to

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say nothing of other difficulties that might vitiate the result, it is impossible to obtain a sufficient quantity of lymph for the purpose. It was necessary, therefore, that other devices should be resorted to.

The leucocytes were eliminated most easily. These bodies, indeed, are not always found in vaccine lymph, and when found exist in very variable numbers in proportion to the quantity of the other constituents. It was therefore to be presumed that they were not essential to its activity; and this presumption was soon verified experimentally. When vaccine lymph was mixed with ten times its volume of water, and the mixed liquid allowed to stand for a few hours, the leucocytes were found at the bottom. When used for vaccination they were found to be entirely inactive.

The attempt was made to separate the minute granular particles from the liquid portion of the lymph in the same way, but without success. It was found that the granules are so exactly of the same specific gravity as the serum in which they float that they will not sink to the bottom. Some other method, then, must be sought for. It was first proven that the granules are insoluble in water, and then the method of diffusion was resorted to to effect the desired separation. Diffusion through a membranous diaphragm was impossible for the same reason that filtration was impossible, namely, the scarcity of lymph. The plan adopted was to take a very small glass tube closed at one end, to introduce into the bottom of this some vaccine lymph, and then very carefully to add a single drop of water, so that the lymph formed one layer of fluid, and the water another, the two layers remaining distinct except at the plane of contact. When this little apparatus was allowed to stand for twenty-four hours, it was found that the granules still remained in the bottom layer; but in the meantime the soluble constituents of the lymph had passed upward by diffusion into the superincumbent layer of water. Vaccination being now practiced with the superficial layer containing all the soluble constituents of the lymph but no granules, was found to be inefficient; but vaccination

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done with the lower layer, the layer containing the granules, was followed by the production of normal vaccine vesicles.

Chaveau then proceeded to apply the same method of investigation to the infectious fluids of small-pox, sheep-pox, and farcy, and always with results confirmatory of those reached in the study of vaccine.

Subsequently the experiments of Chaveau were repeated by Dr. Burdon-Saunderson, and led him to the same conclusion, namely, that the true principle of infection in these infectious fluids is to be found, not in the leucocytes, and not in the albuminous serum, but in the minute microscopic granules.

If these experiments are at all reliable, the information which they furnish is the most important contribution by far that has ever been made to the theory of morbid poisons. The validity of their testimony being conceded, they prove very conclusively several most important propositions, as, for example, these that follow:

That these morbid poisons are in chemical composition albuminous colloids, and of the same nature as living bioplasm.

That physically they consist of shining, transparent, insoluble, soft-solid particles of extreme minuteness.

That these colloidal particles are not simply the vehicles or carriers of contagion, nor yet the accidental concomitants of the pathological processes with which they are associated, but are themselves the specific agents of infection, and the efficient factors of the diseases in which they are found.

From other observations, as, for example, the observations of Cohn on the granules of vaccine lymph, we learn that they are capable of growth and organic multiplication, so that we reach at last the capital conclusion, that they are living organic germs. And here we might rest the argument; but there is still another problem to be solved. Admitting disease-germs to be living and organic, it remains to be determined whether they are parts of the living body which is the seat of the zymotic malady, or whether they are independent

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living creatures for which the diseased body serves as a temporary habitation. The first of these alternatives is the doctrine of Beale; the second is the doctrine of Cohn, and of the German pathologists in general.

THE HYPOTHESIS OF DR. BEALE.

According to the conception of Dr. Beale, the zymotic germs of communicable diseases are products of the abnormal development of the normal bioplasm of the animals in which they are generated—the degenerate offspring of degenerate bioplasts, themselves bioplasts of smaller than normal size, and endowed with properties which render them detrimental to the organisms which they infest—detrimental both to the organisms in which they are developed, and to the organisms upon which they may be engrafted; having the power, in a word, to involve the normal bioplasm with which they come in contact in the same kind of retrograde metamorphosis as that out of which they themselves emerged. In opposition to the German school, Dr. Beale expressly denies that disease-germs are bacteroid in character or origin. He admits that bacteria may be found abundantly in human tissues, in human blood, and even in the interior of white blood-corpuscles, and of epithelial cells; but he denies that these take any part in the production of zymotic diseases.

It will be seen at once that this hypothesis assimilates the infectious zymotic fevers very closely to the processes of common inflammations. For in these also the pathological changes and products depend upon the abnormal metamorphosis, by growth and subdivision of the normal bioplasm involved in the inflammation; and in these also one of the most characteristic phenomena is the formation of multitudes of small bioplasmic granules, precisely similar to those which have been described as the active agents in vaccine lymph. The resemblance goes still further, for these non-specific inflammations, as they are called, are also infectious and communicable; can be transmitted from part to part of the same individual organism, and from one individual to another.

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In illustration of the statement here made of the transmission of inflammatory excitement from one part of an injured organism to another part of the same organism by some occult process of infection, I quote the following suggestive passage from Mr. John Simon's remarkable article on Inflammation, in Holmes' System of Surgery, vol. I, pp. 49, 50:

"But there are facts, almost obtrusively familiar in daily practice, which have hardly yet been appreciated in their bearing on the present subject. Why, when inflammation is produced—say, in the skin and cellular membrane of a finger—by the impaction of a splinter of wood, does not this inflammation confine itself to the particles of texture which are in contact with the wood? why does it go on spreading, hour after hour, in wider and wider circles, dying away as vaguely in the distance as the undulations of ruffled water? and why, two feet off, do the lymph-glands in the axilla swell, and grow painful and tender, and not unfrequently suppurate? Here are two striking facts of inflammatory contagion. On the one hand, as regards the spread of inflammation according to the continuity of tissue, the fact can scarcely be stated in any other ætiological form than this—that such particles of texture as are directly affected by causes of inflammation become capable of exciting inflammation in particles with which they have contact; and the fact thus stated embodies the whole doctrine contended for. On the other hand, the fact that lymph-glands, in connection with an inflaming part, are themselves always more or less thrown into excitement, is assuredly not less suggestive; for, between the primarily inflamed finger and the secondarily inflaming gland in the axilla, there is but one conceivable course or vehicle of influence; and, since the only essential ground of sympathy between the two parts consists in the fact that the one of them naturally receives material from the other, (namely, those redundancies of local exudation which at last return as lymph to the blood), we have no alternative but to regard this material as the exciting cause of the secondary inflammation—no alternative but to admit that the lymph of an inflamed part is imbued

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with contagious properties, which enable it in its course towards the circulation to become an irritant to the lymph-glands where it arrives."

The transmission of ordinary inflammations from person to person is also illustrated by facts, of which it may also be said "that they have hardly yet been appreciated in their bearing on the present subject." The communicability of conjunctival inflammations has been generally recognized both by professional and by unprofessional observers; and it is certain that this communicability is not restricted to such forms of ophthalmia as have been held to be of specific character, but is the common property of all conjunctival inflammations, even of common catarrhal ophthalmia. Mr. Ceely has succeeded, by inoculation, in communicating ordinary herpes of the lip. By the repeated transmission of common pus, by inoculation, into the peritoneal cavities of rabbits, Dr. Burdon-Saunderson not only kept up a constant series of peritoneal inflammations, but the pus, with every successive inoculation, became more and more active until finally it exhibited the properties of a most malignant poison. I will only allude in passing to the inoculability of tubercle and cancer, and to the transplantation of epithelial cells in the process of skin-grafting, but all of these are facts of the same nature with those which we have had under discussion.

The success of skin-grafting shows that there is a physiological as well as a pathological infection, and opens a wide field of speculation not hitherto much cultivated. Doubtless when our knowledge becomes more complete we shall find that the cardinal fact in every variety of organic infection is the transplantation of a living organic germ from one soil to another, where it takes root, and grows and multiplies its kind abundantly.

THE VEGETABLE PARASITE-HYPOTHESIS.

Among the Germans, as has been intimated, the prevalent hypothesis is, that the specific germs of the infectious diseases are vegetal parasites—are, in a word, fungous spores, or micro-

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cocci, or bacteria, the last designation being most generally used. These minute plants belong to the class of organisms included under the term *Schizomycetes*, which name was first applied to them by Naegeli, because they propagate exclusively by fission.

Ferdinand Cohn, who has published a special monograph on these creatures, and to whose researches we are much indebted for whatever knowledge we have of their morphology and natural history, uses the term *bacterium* as a class designation. This class he divides into four genera, and these genera again into species, as follows;

(1). *Sphero-bacteria*—spherical bacteria—the *micrococci* of Oestel and many other authors—called also *microspheres*.

(2). *Micro-bacteria*—rod-like bacteria—including *bacterium termo*, and *bacterium lineolum*.

(3). *Spiro-bacteria*—corkscrew-shaped bacteria—including *spirillum termi*, and *spirillum undula*.

(4). *Unclassified bacteria*, that need not be further mentioned here.

Lebert objects to the extension of the term *bacterium*, which means a rod, so as to make it comprehensive of globular forms. He says: "We are concerned here with the lowest vegetable forms, those which are recognized by their extreme minuteness, being in fact on the ultimate boundary of microscopic vision, and which are held by the best mycologists as incapable of becoming transformed into more highly organized fungi by cultivation. I include, therefore, the groups of globular, rod-like, and spiral fungi (it seems to me as irrational to speak of globular bacteria as of globular rods,) together under the names of *protomycetes*."—*Ziemssen's Cyclopedia, vol. I, p. 241.*

In some of their forms these *protomycetes* are the smallest of living creatures. I have already mentioned the microspheres, the shining particles discovered by Beale in vaccine lymph as less than the one-twenty-thousandth of an inch in diameter. The most common rod-like forms are about one-nine-thousandth of an inch in length—their thickness being, of course, very much less.

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The only process of reproduction which has been observed in them, is that of fission or gemmation; and under favorable circumstances the rate of multiplication is enormous, it having been calculated that a single bacterium may produce 16,777,220 new individuals in twenty-four hours; or, putting it otherwise, the progeny of a mass of bacteria weighing one-twenty-four-hundredth of a grain would, at the end of a day, weigh a pound. While no other method of bacterial production has been demonstrated, except the fission of pre-existing individuals, it is by no means certain that this method is the only one which exists in nature. If we take a perfectly homogeneous and transparent liquid containing a little organic matter in solution, and watch it through a microscope, some very curious phenomena present themselves. First, the liquid becomes milky and nebulous by the aggregation of the diffused organic matter into particles too small to be separately visible even under the highest powers. Next, and perhaps by a further process of aggregation, larger particles present themselves—particles that are large enough to be separately seen, but that are still of indeterminate form and character. Then at last, as if these larger particles had passed by some miraculous transformation into living creatures, living, moving and multiplying bacteria are found in the liquid where none could be discovered a few minutes before.

But the liquid commonly used for the cultivation of bacteria contains no organic matter whatever. It is composed of potassic phosphate, calcic phosphate, magnesic sulphate, and ammonic tartrate, all in very small percentages, dissolved in water and the mixture boiled. This liquid may be kept for indefinite periods without change, remaining absolutely transparent and barren, provided that care be taken to protect it from contamination. But the development of bacteria may be excited in it at pleasure by simply touching it with a splinter of wood, with a glass rod, with a thread of cotton or silk; or even by dropping into it a particle of dust, or a drop of distilled water. There is no reason to believe that in these manipulations any germs of bacteria—if, indeed, they have

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any germs—are added to the cultivation-liquid. The drop of distilled water, for example, may contain no organic forms which can be recognized even by the aid of the most powerful lenses, but it certainly does contain something which excites in the previously barren solution the rapid production of living creatures.

It would seem as if we had here two distinct testimonies of the truthfulness of the doctrine of spontaneous generation, or archibiosis, as Dr. Carlton Bastion prefers to name it. It is a tempting theme for speculation; but for the present I must pass it by without other mention.

The vegetal nature of the bacteridia is inferred from facts connected with their nutrition. Like plants, they live on inorganic food. Like plants, they derive the nitrogen which they build up into albuminous compounds, not from previously existing albumen, but from ammonia. Like other fungi, and colorless plants in general, they derive their carbon from almost any of the carbon compounds except carbon di-oxide. For example, in the cultivation-liquid which I have described, they decompose the ammonic tartrate, and build up its nitrogen and carbon into higher combinations.

We may, then, if we please, class bacteria in the vegetal kingdom. They are certainly the lowest of the fungi, and if fungi must needs be regarded as plants, then it follows that bacteria are plants, also. A train of reasoning similar to that which leads to the conclusion that the bacteridia are the lowest and simplest of plants, would lead to the recognition of the amœbæ as the lowest and simplest members of the animal hierarchy. But inasmuch as these infinitely simple organisms have not become sufficiently differentiated to exhibit either vegetal or animal characters with either constancy or clearness, it might be quite as well to follow the example of Hækle, and group them and their congeners into a third natural kingdom, the kingdom, namely, of the *Protistæ*.

There are many other facts connected with the natural history of bacteria which I am obliged to pass over for the present. I am even obliged reluctantly to omit all discussion of

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the nature of their action in the processes of fermentation and putrifaction, which seem to be so closely allied to the pathological processes which occur in zymotic diseases.

In the protomycetic theory of pathologic infection it is the spherical bacteria—called also micrococci, microzymes, and microspheres—which have attracted most attention; this variety being found in the infectious fluids of the majority of contagious diseases; and what is more important for our present purpose, in vaccinia and variola. We are obliged to believe that for each definite disease of infectious origin, there must exist a specific germ, or *protomycete;* because it would be absurd to suppose that the same identical fungus could give rise to several widely different maladies. But this conclusion is based altogether upon hypothetical premises, the scrutiny of the most powerful lenses in the hands of the ablest microscopic experts failing to reveal in the germs themselves of the several infectious diseases any recognizable differences of form or of character. And, indeed, it would be hard to imagine demonstrable differences among creatures so minute in size and so simple in organization.

Besides these two hypotheses as to the nature of disease-germs which I have endeavored to explain, there is still another hypothesis, which has been defended by Dr. Bastian, and which unites the other two into a single body of homogeneous doctrine. Dr. Bastian recognizes the bacteroid character of the disease-germs, but he also holds that they are derived, according to the teachings of Beale, from the normal bioplasm of the diseased body by a process of degenerative multiplication; that they are pathological products engendered within the body by the process which Panchet has designated as heterogenesis; that in a word there is a bacterial degeneration of tissue which must be ranked side by side with fatty degeneration. Of course it follows as a part of this doctrine that the bacteria produced by the heterogenetic transformation of human tissues are themselves endowed with the faculty of reproduction by fission, so that we would have homogenetic biodiæresis alternating with hetero-

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genetic bioparadosis. There are many curious facts in connection with this subject of the heterogenesis of low tribes of living creatures. But for further information I must refer any one who takes interest in such things to the original work of Panchet, his "*Heterogenie;*" and especially to Dr. Bastian's "Beginnings of Life."

THE DISSEMINATION OF SMALL-POX.

Without stopping to discuss which of these several hypotheses is the true one in the ætiology of small-pox, but resting on the general postulate that the virus of small-pox is a *true contagium vivum*, we proceed to consider certain questions of practical importance in relation to public hygiene—questions, namely, concerning the dissemination of the small-pox virus and the propagation of the disease from person to person, from place to place, and from community to community.

We have already reached the conclusion that the mycrozymes of small-pox are generated inside of diseased human bodies, and that the malady is propagated exclusively by contagion, and from person to person. But I am not prepared to assert that the multiplication of the microzymes outside of human bodies is absolutely impossible. We know that organisms somewhat analogous to these may be generated in both ways. For example, that white blood-corpuscles, mucus-corpuscles, and pus-corpuscles, although normally generated only inside of the bodies of living animals, may also, by possibilty, and under circumstances which I need not stop to explain, continue for a time to live and grow, and multiply themselves by fissiparous subdivision outside of their usual habitats; and Ferdinand Cohn has been able to observe the division of the sphero-bacteria of vaccine lymph after its removal from the vaccine vesicle. It is conceivable, therefore, and even probable, that the microspheres of small-pox virus may also undergo development and multiplication outside of the bodies of small-pox patients. But I must believe that this abnormal process of external generation is of quite limited extent, and that we may eliminate it from the argument altogether without materially vitiating our conclusions.

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The small-pox microzymes, then, being generated in unimaginable multitudes within the bodies of small-pox patients, these three problems present themselves for solution, namely:

1. How do they find their way from their native habitations into the outer world?

2. How do they pass from this outer world into other human bodies for the propagation of pestilence?

3. How do they live in the world outside of the living organism in which they are generated? and in what relation do they stand to the several conditions of their abnormal and provisional environment?

There is little room to doubt that the pestilential microzymes are thrown off from all the limiting surfaces of the body—from the lining membranes of the lungs and air-passages entangled in expectorated mucus, and intermixed with the gases breathed out in respiration—from the internal coats of the alimentary canal along with the alvine dejections—and from the skin, perhaps in the act of perspiration, but most abundantly from the vesicles, pustules, and scabs which characterize the various stages of the cutaneous eruption. Leaving the sick body through all of these various avenues, they attach themselves to the bedding and clothing of the patient; they are thrown into privy sinks and upon the surface of the ground along with the alvine excretions and the miscellaneous slops of the sick-room; they float in the atmosphere of the sick-chamber, and fall upon floors and furniture, and upon the persons of attendants and visitors.

These wandering mycrozymes find entrance into the bodies of their victims either by accidental inoculation through some abrasion of the skin, or of the more accessible mucous membranes, the inoculation resulting from contact with contaminated clothing, bedding, or other articles, or from the handling of sick persons; or else they are introduced through the medium of atmospheric air and the pulmonary membranes in the process of respiration. Whether they may also gain admission through the digestive mucous membranes

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along with water and food has not been definitely settled. Epidemics are never kept up through the medium of direct inoculation, so that for all practical purposes the natural propagation of small-pox is restricted to cases dependent on the atmospheric dissemination of the microzymes and their introduction into human bodies with the life-giving oxygen of the inspired air.

It would seem that the microzymes are incapable of passing through the unbroken skin, or of being engrafted upon it so as to grow and multiply; but when they are brought into contact with skin denuded of its epidermis, fruitful inoculation readily occurs. In the foregoing sentence I have incidentally touched upon a distinction which leads to much curious speculation, and one which deserves more definite statement. It is this: Whether the inoculated microzymes pass at once into the vessels of the part-blood-vessels or lymph-vessels, as the case may be, and thence into the general current of the circulating blood, so that the infection of the blood is the primary lesion, and the infection of the solid tissues of secondary occurrence; or, whether the inoculated microzymes first take root at the point of inoculation, and live and grow and multiply there, in the same way that epithelial cells do in the now familiar process of skin-grafting, with subsequent infection of the blood through the agency of germs derived from the inoculated tissue, the infected blood becoming in its turn the medium for the systemic infection of the organism.

I am decidedly of the opinion that the second of these explanations is the true one; that in inoculated small-pox the disease is first local and then general; that a small portion of solid tissue is first affected; then the circulating fluids—blood and lymph—and then the solid tissues generally. Perhaps it is here that the explanation is to be found of the differences which exist between small-pox developed by inoculation and small-pox developed through the agency of aerial infection. For it is easy to conceive that in small-pox produced by the respiration of infected air the microzymes pass imme-

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diately into the circulation, so that the circulating fluids are first involved in the pathological movement, which spreads next to the solid tissues in general, while the preliminary local stage of inoculated small-pox is altogether wanting.

While our knowledge of the volatility, longevity, and transportability of the microzymes of small-pox is neither very definite nor very exhaustive, there are still a few general conclusions in relation to these several subjects that may be regarded as tolerably well established.

(1.) Since the microzymes are solid particles, it is evident that their volatility is not analogous to the volatility of gases. On the contrary, they float in the air, more on account of their minuteness than on account of their specific levity, in the same way that particles of clay or sand, or particles even of the heavier metals, may float in the air in the form of dust or of impalpable powder. And just as these are always prone to sink until they fall upon some solid surface, so the microzymes, being heavier than atmospheric air, sink slowly through it; and so collect like dust upon floors, and walls, and beds, and draperies.

(2.) The determination of the longevity of the microzymes is beset with many difficulties. It has been supposed that in the open air, with its ceaseless agitations, their duration is quite ephemeral. It seems, indeed, certain that infected air speedily loses the power of propagating pestilence. But it does not follow from this that the microzymes have died. It is just as probable that they have settled down to the surface of the earth by a process of filtration depending upon their specific gravity. However this may be, they sometimes exhibit considerable tenacity of life when they are entangled in the meshes of blankets, quilts, and articles of wearing apparel which have been kept in close boxes, trunks, or closets. Facts have been recorded on various occasions which indicate that fomites, under favorable circumstances, may retain the power of communicating small-pox for weeks and months, and sometimes for many months.

(3.) In their transportation from place to place, the micro-

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zymes are entirely passive. They are either wafted about upon the wings of the wind, or are carried through the ordinary agencies of human travel. In infected bodies, or in infected baggage or merchandize, the distances through which they may be transported is practically without limit—across an ocean or a continent—and it is in this way alone that the seeds of epidemics are disseminated through widely separated communities. We have very few recorded facts to indicate the distances through which they may be transported by atmospheric currents; but, fortunately, the greatest of these distances is not great. Dr. Haygerth reports an instance, on the authority of an unnamed American physician, in which the contagion was borne by the wind across a river fifteen hundred feet wide so as to infect some carpenters who were at work on the other side, from a case of small-pox. I suppose that most physicians have a sort of vague impression that the poisonous particles might be wafted through much wider spaces than this; but such is not my own opinion. As a rule, I believe that they very rarely pass through the air to even so great a distance as one hundred feet. Again and again have I seen small-pox confine its depredations to one side of a street, unprotected persons on the other side escaping with impunity. Again and again have I seen it confined to one house in a row, the adjoining houses escaping "scot free." I have even seen cases in which unprotected persons have been separated only by a plastered wall from most malignant cases of the disease without suffering infection. These facts show that small-pox is not disseminated very freely through the atmosphere, and that small-pox microzymes are either incapable of living in the air except for brief periods of time, or else that they are speedily eliminated from it by their specific gravity.

THE PROPHYLAXIS OF SMALL-POX.

The natural history of the small-pox poison which I have so briefly given, prepares us for the rational consideration of the great practical problem of the protection of individuals

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and of communities against its ravages. Measures of prophylaxis may be arranged under three heads, namely, isolation, disinfection, and vaccination. Let us consider each of these separately.

ISOLATION.

The object of isolation is to keep the sick and the well apart, so that the poison of the disease may not be able to pass from the one to the other. If they are already sufficiently separated by distance, nothing is to be done but to erect such barriers and to establish such restrictions as will prevent all dangerous intercommunication. But if the malady makes its appearance in dangerous proximity to unprotected persons, whether in the same house or neighboring inhabitations, there are two courses of procedure possible.

First, we may remove the sick from the threatened locality, in this way removing the source of infection and putting a stop to the local increase of the infectious germs. Of course a certain amount of infectious material which has been already emitted from the sick body, will remain behind, and this may be sufficient to cause some mischief, but the danger will be lessened according to the mildness of the attack and the promptness with which the removal is accomplished. As auxiliary to removal, and for the destruction of the microzymes left behind, we resort to disinfection, which will be treated of presently.

Secondly, we may remove those who are still well from the locality rendered dangerous by the presence of the sick. This, of course, affords complete protection to such as have not already become infected, but it is a method of protection which is not generally available. It is impossible for a whole community to leave home. But if the positions which I have taken with reference to the transportation of the poison are tenable, a great deal of good can be accomplished by such partial separation of the sick and the well as may be easily put into practice. The greatest difficulty is experienced when the sick and the well live together in the same house.

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It would be better in all such cases, if all who were without protection could be sent away. But when this cannot be done they ought to be kept out of the infected room, and this should be shut off as completely as possible from the rest of the house. The doors between, should not only be closed and kept closed, but all intervening cracks should be hermetically sealed. The microzymes being themselves solid, cannot pass through solid walls, but inasmuch as they are extremely minute, they can pass through very small chinks and crevices. It is quite conceivable that infection might pass from one room to another through the key-hole.

In the case of adjacent houses, all communication should be prohibited, and the windows and doors opening between them, should never be opened. The infection may pass from one house to another in spite of this precaution, but the danger is rendered less. The microzymes may by possibility manage to travel round a corner, but they travel with much more facility in straight lines.

DISINFECTION.

The object of disinfection is to destroy the infectious microzymes after they have been generated and thrown out of the sick body, and before they can become instrumental in the propagation of pestilence; and inasmuch as the microzymes are albuminous, soft-solid, living organisms, their destruction is easily accomplished.

I can add nothing to my discussion of the theory and practice of disinfection, in my article on yellow fever in last year's Transactions; and to that article I must refer for my views on the subject of the disinfection of the illimitable kingdoms of the air. It is sufficient to say here, that this is impossible in the nature of things, and to attempt it is folly. Not only is it impossible to disinfect *all-out-of-doors*, but it is also impossible to disinfect the restricted space of a sick room while it is inhabited by human creatures, and this for the very sufficient reason that whatever agent of destruction will kill the atmospheric microzymes, will at the same time kill the human

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occupants of the room. But this difficulty being eliminated, the disinfection of such small portions of air as can be confined in the rooms of houses, or in the holds of ships, is entirely practicable. We have only to fill the designated space with the fumes of burning sulphur, or of chlorine, or of nitrous acid, or of super-heated steam, and the work is done. No living creature can withstand the destructive energy of any of these agents when they are used in a sufficient degree of concentration and with sufficient persistence.

The disinfection of all solid articles and textile fabrics, of floors and walls, and furniture, and bedding, and all sorts of clothing, and the excretions of the sick, can also be effectually accomplished. This may be done by heating such things to two hundred, or two hundred and fifty degrees Fahrenheit; or else by the direct application of some chemical disinfectant in a solution of adequate strength. Of these chemical agents there may be mentioned the bichromate of potash, the sulphate of copper, and the chlorides of iron and zinc.

In my own practice of disinfection against small-pox, I have restricted myself to two destructive agents, namely, boiling water and the fumes of sulphur—the first for the disinfection of every variety of fomites, and the second for the disinfection of contaminated rooms. These are cheap, convenient to use, and efficient.

As to the value of disinfection, when properly done, as a prophylactic against small-pox, I consider it to be very great. When we know that the *contagium vivum* of this dreadful malady can live for months in the meshes of a bed-blanket, or of a flannel shirt, the commonest instincts of self-protection demand that the contaminated article, if it cannot be purified, must be destroyed. But the destruction of all infected articles during an epidemic would leave many a poor family destitute of defense against the assaults of winter. How fortunate, then, that all the ends of prudence may be served by placing the contaminated articles for a little while in a vessel of boiling water. Again, we know that the small-pox microzymes may establish themselves in colonies on the floors,

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walls, and ceilings of rooms so as to render them dangerous for human habitation for long periods of time. The building of houses is expensive, and people consent to have them destroyed with reluctance. How comfortable, then, is the knowledge that a few pounds of sulphur burned in a room produces an immense volume of sulphur di-oxide, which is as fatal as the poison of the upas to all living things—a gaseous volatile substance which encounters the microzymes in mid-air, and pursues them with insatiable ferocity into all the cracks and crannies in which they may hide themselves.

Particular directions for the practice of disinfection will be found in another part of this essay.

VACCINATION.

Of all the prophylactic measures which have ever been made use of against small-pox, vaccination is by common consent the most important. When Jenner had succeeded in demonstrating his discovery, it was confidently predicted that the reign of small-pox would be speedily ended, and the world permanently freed from the immeasurable evils which, during many centuries it had inflicted on the human family. Very vigorous efforts were employed by the medical profession to extend the practice of vaccination among the people generally; and in many, perhaps in most, European countries it has been made obligatory by express provision of law. The result has not been altogether in harmony with the anticipations of its advocates. It is true, that the prevalence of small-pox has been greatly diminished; and it is true that the percentage of mortality to population has exhibited much lower averages since the introduction of vaccination than before; so that there can be no question that it has been the means of saving the lives of many thousands, perhaps I might safely say of many millions, of human creatures. But notwithstanding this, the dreadful malady which had been so confidently consigned to extermination, has still managed to maintain a tolerably vigorous existence among the nations. And now, that the conditions of the problem are better understood, we are

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obliged to conclude that the final extinction of small-pox will not be accomplished until our civilization has attained a much higher grade of development than any which it now presents, or which it is likely to reach for some centuries to come. The reason for this conclusion is easily found. It is not that our medical ancestors were greatly mistaken in their estimate of the protective value of vaccination; but that the experience of a century has shown that under existing circumstances it is practically impossible to secure the thorough vaccination of the whole population of cities and States. Some of the difficulties which stand in the way of the efficient vaccination of populous communities are illustrated in another part of this report, and that part of the discussion need not be further dwelt upon here.

In the meantime, the more we extend our knowledge of vaccination the more securely is its prophylactic efficacy established, and the more it becomes apparent that just in proportion to the thoroughness with which it is practiced is the measure of immunity which is obtained. Small-pox has maintained itself in Europe ever since its introduction in the middle ages. But how trivial have been its ravages during the present century compared with the dreadful pestilences which swept over that continent before the time of Jenner. During the seventeenth and eighteenth centuries, for example, it is estimated that the mortality from this disease exceeded half a million of souls annually. Other accounts tell us that during this time deaths from small-pox constituted from one-tenth to one-eighth of the total mortality of European nations. The details and special statements can be found in Hecker.

Again, how eloquent is the testimony which results from the comparison of the mortality of small-pox at the present time, in countries where vaccination is generally practiced, with the mortality in countries that have not yet learned to appreciate its value.

Take, for example, the State of the Punjaub in British India. Dr. DeRenzy, Sanitary Commissioner, reports that in

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that province, with a population of 18,000,000 the deaths from small-pox are never less than 20,000 a year, while in 1869 they amounted to more than 53,000. In England, before the introduction of vaccination, the mortality was as great as it now is in Panjaub; but it has declined under the influence of the the great prophylactic, until the annual English average does not exceed five thousand. In other words, while vaccination has failed as yet to exterminate small-pox in England, it has so far diminished its prevalence that it may be fairly credited with the salvation in that country of 15,000 human lives annually.

The standing armies of Europe include some five or six millions of men, living under such conditions as would make them extremely liable to epidemics of small-pox. But these men are so completely under control, that it has been found possible to enforce amongst them all the regulations that are requisite to secure the prophylactic influence of vaccination; and the result has been, that in European armies small-pox never becomes epidemic, and very rarely manifests itself even in sporadic cases.

But it is no part of my purpose to accumulate testimony in proof of the value of vaccination as a prophylactic against small-pox, because a superabundance of such testimony is already on record in our standard works, and is as familiar as household words to the members of our profession.

Vaccination manifests its prophylactic influence in two ways, namely: First, by so fortifying the systems of vaccinated persons as to enable them to escape attacks of small-pox altogether; and

Secondly, by diminishing the rate of mortality of small-pox when it occurs in persons who have been vaccinated.

As vaccination becomes more and more general, that is to say, in proportion as the ratio of vaccinated persons increases, and the ratio of unvaccinated persons diminishes, in this same proportion, or at any rate in a somewhat similar proportion, will it be found that small-pox, in epidemic visitations, attacks the vaccinated and the unvaccinated portions of

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communities. In the city of London, for example, the records of the small-pox hospital show that during the last fifty years the percentage of post-vaccinal cases to the whole number of cases admitted has steadily increased, while during the same time, in the same institution, the percentage of mortality to cases has steadily diminished. These facts show very conclusively that even in those cases in which vaccination has failed to prevent the accession of small-pox, its beneficent influence is still sufficient to modify the severity of the disease and to save the lives of many patients. The percentage of vaccinated persons who will succumb to the variolous infection in the midst of epidemics, depends on several circumstances, some of them perhaps but little understood, but of which the more important may be indicated in general terms, as, (1) the degree of susceptibility, and (2) the degree of exposure—the first head including such influences as affect the subject, and the second head such influences as affect the environment.

The degree of susceptibility of vaccinated persons, or, to express the same thing in converse terms, the amount of protection afforded by vaccination, depends chiefly upon two factors, namely, the extent of the vaccination, and the age of the vaccination. The extent of the vaccination is measured by the extent of surface which is involved in the vaccine eruption. A large vesicle affords more protection than a small one, and when the vesicles are all of the same size the protection afforded increases with their number. I am not able to say absolutely that the prophylactic potency of vaccine vesicles increases in exact numerical proportion to the increase of their size and number, because this has not been proven as yet; but the general statement that large vesicles are of greater protective value than small ones, and that several vesicles afford a larger measure of protection than a single one, other things being equal, has been placed beyond all dispute. Whether at last, by the extension of the vesiculation, either from a single center or from several centers, it is possible to reach a degree of protection in which the whole sus-

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ceptibility of the organism to small-pox is utterly and absolutely abolished and destroyed, is also a problem which has not been solved. For myself, I can only say that I believe that the protection afforded is always a measurable quantity —always a matter of degrees—and that the systemic susceptibility is never absolutely exhausted, not even by the most severe attacks of small-pox. Nevertheless, the immunity conferred by from four to six vesicles of good size is so nearly complete, that for all practical purposes the fear of infection may be entirely discarded. Nay, more, I believe that one good vesicle of recent date affords so large a measure of protection, as to secure immunity under all ordinary circumstances.

By the age of the vaccination, I mean the length of time which has elapsed since it was done. It was formerly the opinion of many members of the profession, that the immunity from small-pox, which was at any time obtained by means of vaccination, remained permanent, and was never afterwards lost or in any way diminished. But a larger experience has shown this opinion to be untenable—has shown that the protective influence of vaccination grows weaker and weaker with the progress of years, until finally, in many cases, it disappears altogether. This fact, which has been fully established by observation, might have been very safely presumed upon the general principle, that there is in every organism which has been subjected to any violent perturbation, an ineradicable disposition to swing back into its original and normal condition. It was the recognition of the principle that the protection afforded by vaccination is not permanent, that has led to the practice of revaccination. It is the recognition of this principle, also, which invests the questions, How long does the protective influence of vaccination last?, and under what circumstances is it diminished or destroyed?, with a considerable amount of practical importance. As yet our knowledge does not enable us to return definite answers to these questions. While we know that the protection does not continue indefinitely, we know that in very many instances

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it continues for a considerable number of years. We have reason to believe that the organic change impressed upon the system, whatever its character may be, is more mutable and evanescent during the periods of infancy and youth, than it is during the periods of manhood and old age. This, indeed, is in harmony with the general law that physiological metamorphosis is more active during the growth of the body than during its maturity and decay. It is upon presumptions of this character that our rule of practice has been founded, namely, to vaccinate in infancy and revaccinate on the attainment of adult age. Under the ordinary circumstances of life, these two vaccinations are sufficient, always supposing that they have been adequately done. But prudence dictates an obvious supplement to the general rule, namely, this, that under all circumstances of direct and immediate exposure, vaccination should be again invoked, and this as often as the danger of direct and immediate exposure recurs. What I mean by immediate and direct exposure is to be frequently in the same rooms with small-pox patients, or to live in the same houses, or in houses immediately adjacent.

The degree of exposure, also, depends chiefly upon two factors, namely, the quantity and virulence of the poison, and the length of time during which the exposure continues. It is easy to understand that the quantity of poison thrown off from a mild case of short duration, must be much less than the quantity thrown off from a severe case of long duration; that the quantity which will accumulate in a large, well-lighted and well-ventilated apartment, where cleanliness is assiduously practiced, must be much less than the quantity which will accumulate in a small, dark room, which is kept almost hermetically sealed, and where cleanliness is altogether neglected; that the quantity to be found where there are very few cases under favorable circumstances, as in well-managed private houses, must be much less than the quantity to be found where there are a great many cases under circumstances less favorable, as in the crowded wards of small-pox hospitals. These propositions, indeed, are so im-

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mediately obvious that neither argument nor illustration is needed to sustain them.

Again, while the quantity of the small-pox poison varies thus with varying circumstances, I am satisfied that its virulence also varies with varying circumstances; and I am satisfied, further, that where the microzymes are most abundant, there also they exhibit the largest endowment of malignant activity. This is equivalent to the assertion, that the most malignant microzymes are the products of the worst cases of the disease, and of the most adverse influences of the environment—a doctrine which does not perhaps admit of positive proof, but which seems to be in harmony with the general course of nature. Now, I believe that both of these agencies are of the utmost importance in the propagation of small-pox—that both the greater abundance and the greater malignancy of the microzymes contribute to the rapid extension of epidemics and to the production of malignant cases. Their greater abundance enables them to attack their victims in greater numbers, and their greater virulence enables them to overcome a more resolute resistance on the part of the organism.

I know that my views as to the influence of quantity and virulence (of infectious material) in the propagation of small-pox are in advance of current theory, at least in definiteness and precision; and I know, also, the character of the arguments that can be urged against them. For example, it is contended that in the practice of inoculation with small-pox virus, it is immaterial whether the quantity used be large or small. But I deny the fact as stated, and insist that the element of quantity does materially influence the result. It is true, that an infinitessimal particle of virus will provoke an attack of small-pox; but I believe that a much larger quantity will provoke an attack of much greater severity, and this very specially if it is inserted in several places so as to afford a fair field for the malignant energy of the microzymes. Why inoculated small-pox should be so much milder than small-pox contracted in the usual way, admits of explanation on

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this same principle, since it is not difficult to understand that when the mycrozymes enter the blood in the act of respiration, they may remain there a long time multiplying their generations until their number becomes immensely great before they make their assault upon the general system, which then, because of their number, is overwhelming; while a far smaller number, introduced immediately into the solid tissues, may be able to precipitate the crisis, making, as it were, a more rapid, and more brilliant, but less destructive campaign. Of course this suggestion is little better than a transcendental speculation, but for all that, it may turn out to have something in it.

The duration of exposure is also evidently an important factor in the problem of infection; for, evidently, the longer the time of exposure the more frequent are the opportunities presented for the invasion of the microzymes. And then, while the vital energy of the system might be sufficient to repel invasion after invasion, still it might be forced to surrender to assaults indefinitely repeated. These considerations are so plain, belonging, as they do, to the common calculus of probabilities, that there is no need to dwell upon them at any length.

I subjoin here a few statistical statements, drawn for the most part from recent publications, and based for the most part on recent epidemics, in illustration of the prophylactic influence of vaccination.

In the city of Hamburg, during the year 1871, 3,301 vaccinated persons had small-pox, of whom 347 died, and 2,954 recovered—the mortality being, therefore, at the rate of 10.51 per centum. During the same epidemic, 710 unvaccinated persons had the disease, of whom 700 died, and only 10 recovered; a mortality of 98.59 per centum. So that the danger of death to an unvaccinated person was about nine and a half times as great as to one who had been vaccinated.

Small-pox was epidemic in London in 1870–71–72. During this time the number of cases treated in hospitals amounted to 14,800, a sufficiently large number to form the basis of a trustworthy estimate, and placed under circumstances most

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favorable for statistical observation. The records show the rates of mortality to have been, in vaccinated cases (where one vaccination had been performed in infancy), 10.15 per centum; and in unvaccinated cases, 44.80 per centum. The percentage of deaths to cases among children under ten years of age was, for those who had been vaccinated, 8.63; and for those who had not been vaccinated, 49.45. In some of the hospitals the effect of a plurality of marks on the rate of mortality was investigated. Out of 5,539 cases treated in the Hamstead Hospital and the Hopewell Hospital, the mortality, which was 55.9 per centum in unvaccinated cases, decreased to 15.2 in cases with one mark, and to 5.5 in cases with five marks or more. Of 420 well-vaccinated cases under fifteen years of age, the death rate was only 0.47 per centum, which might almost be claimed as a positive immunity from fatal results. Still more striking is the fact, that out of the whole 14,800 patients there were but four well-authenticated cases in which *revaccination* had been recently performed, and these were light attacks.

In the London Small-pox Hospital under the care of Mr. Marson, from 1836 to 1855, there occurred 5,000 cases of post-vaccinal small-pox, with the following results: The percentage of deaths to cases amongst those who claimed to have been vaccinated, but could show no scar, was 25.57; amongst those who had one cicatrix, 7.73; amongst those who had two cicatrices, 4.70; amongst those who had three cicatrices, 1.95; amongst those who had four or more cicatrices, 0.55.

These statements are certainly conclusive of the protective powers of vaccination in the class of cases which are most commonly quoted by the opponents of vaccination in proof of its inefficacy—I mean the class of cases which have contracted small-pox in spite of previous vaccination—and I might allow the argument to rest here; but inasmuch as a great deal of the trouble which we had in Mobile in our efforts to secure the vaccination of the people grew out of the persistent opposition of some of our physicians, I add here a tabular statement of some additional testimony:

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PLACE AND TIME OF OBSERVATION.		Total Cases.	MORTALITY PER CENTUM.	
			Vaccinated.	Unvaccinated.
France	1816–1841	16,397	1.00	16.12
Switzerland	1825–1829	5,838	2.16	60.00
Milan (Italy)	1830–1851	10,240	7.66	38.33
Verona (Italy)	1810–1838	4,119	5.40	21.60
Bohemia	1835–1855	15,640	5.20	29.80
Vienna, (Gen'l Hospital)	1837–1856	6,213	0.50	30.00
Wurtemburg	1848–1850	6,258	3.50	38.90
Malta	—— ——	7,570	4.20	21.70
Geneva (Switzerland)	1858–1859	1,568	9.50	45.00
Prussia	1858	30,843	7.00	22.00
Prussia	1859	16,055	6.00	17.00

The records of our Mobile epidemic give the percentage of deaths to cases in vaccinated persons at 20.90; in persons not vaccinated at 25.94; in persons in whom this point was not reported, 67.18; and of the last two classes together at 30.58. I give these statements for what they are worth, which I am obliged to say is very little. In most particulars our statistics are remarkably complete and accurate; but as regards this particular point they are sufficiently otherwise. Inquiry was made by the agents of the Board of Health in every case as to whether the patient had been vaccinated or not, and the answers obtained were placed on record, but I was able to satisfy myself that in a very large proportion of the cases the answers were entirely unreliable. Every negro who had ever had his arm scratched reported himself as vaccinated; but when the arms were examined very often not the slightest vaccine mark was to be found. Add this source of uncertainty to the fact that in most of the cases that had been vaccinated, the vaccinations were of many years standing, and very rarely presented more than a single cicatrix, and we have ample explanation of the wide divergence of our statistics and the European statistics which I have quoted.

I have said that the difficulties that stand in the way of

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securing the proper vaccination of populous communities are practically insuperable. In smaller communities these practical difficulties are greatly diminished; and when in any case they have been overcome, then in that community there need be no fear of small-pox. This is proved to the letter by the experience of the little town of Salzungen in the Duchy of Saxe-Meiningen in Germany, where, during the progress of the great epidemic of 1871, the authorities resorted to extraordinary measures to insure the vaccination and revaccination of every inhabitant of the place, both old and young. The result was, that while the small-pox raged with violence in all the surrounding towns and villages, Salzungen escaped without a single case.

THE DANGERS OF VACCINATION.

Vaccinal Syphilis.—I am not able to present any new testimony on the subject of vaccinal syphilis. The investigations conducted in France a few years ago seemed to have established beyond controversy, that when syphilis did follow vaccination, it was because the lymph which had been used was contaminated by the intermixture with it of some adventitious substance, such as syphilitic blood or pus. In these investigations, it was found that the blood of syphilitic patients would sometimes communicate constitutional syphilis; while in a large number of experimental vaccinations performed with lymph derived from subjects known to be syphilitic, the vaccinia passed through its usual stages in an entirely satisfactory way, and no symptoms of syphilis were subsequently manifested. The conclusions thus obtained received the almost unanimous endorsement of the medical profession in Europe and in America. But the question has been opened again by the cases reported by Mr. Jonathan Hutchinson to the Medical Chirurgical Society of London, and by Mr. Thomas Smith to the Clinical Society of the same city. It is claimed that in these cases all the rules dictated by the most scrupulous caution were observed; that no blood or pus was introduced in the performance of the vaccina-

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tions; and that the circumstances all taken together show that the *contagium* of syphilis and the *contagium* of vaccinia *must* have been included together in the common fluid of the vaccine vesicle. It is impossible to argue against facts; and the facts here alluded to have led many prominent members of the profession in England to concede the possibility of vaccinal syphilis. For myself, although I have nothing to advance except an opinion, I must avow that I still remain skeptical. And even if it should be ultimately settled that the infection of syphilis may be communicated by vaccine lymph, still the actual occurrence of syphilis through this agency must be admitted to be so extremely rare that it ought not to be allowed to discredit the practice of vaccination, any more than the fact that tetanus sometimes follows vaccination has been allowed to discredit it.

The vaccine vesicle is a living thing—a growth as much as cancer or tubercle is a growth, and the presumption is that in the process of growth it converts everything which it appropriates into its own specific nature, and this without regard to the soil in which it grows. Just as, for illustration, the poisonous nightshade, the luscious strawberry, and the medicinal poppy may all grow side by side out of the same soil, and be fed with the same food, and yet each remaining true to its own nature, will produce its own characteristic fruit. I know that living organisms may become contaminated with alien, abnormal, and morbid elements; and so it is possible to conceive that the vaccine vesicle might appropriate along with its own proper constituents, the *materies morbi* of constitutional syphilis. But while I admit the possibility of the contamination, the probability of it seems to me to be almost an infinitesimal quantity. Is it not evident, indeed, considering how common syphilis is, and how many millions of human creatures have been vaccinated during the last hundred years, that if the danger were other than infinitesimal, it would have ceased long ago to be a matter open to discussion?

Erysipelas and Phagedena.—While in Mobile we had no

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vaccinal syphilis that I am aware of, sundry other undesirable complications occasionally presented themselves. It is estimated that altogether, by public vaccinators and by physicians in private practice, some twelve or fifteen thousand vaccinations were performed during the continuance of the epidemic. Amongst so many sore arms, it would have been very strange, indeed, if some had not exhibited unfavorable symptoms. If so many had only been scratched with a knife, or a pin, or a briar, it would be reasonable to expect that some of them would prove troublesome; and with the additional cause of irritation, furnished by the inoculated virus, the calculus of probabilities would warrant the expectation of a still larger proportion of untoward results. We had, accordingly, a considerable number of very sore arms. It was not always easy to explain these accidents, or to trace them to their several causes. It is possible that sometimes the vaccine was at fault. Sometimes the systems of the persons vaccinated were doubtless in an unhealthy condition. Sometimes injury was occasioned by blows and falls. Sometimes the irritation of the clothing was a source of trouble. But perhaps the majority of the bad arms resulted from the fact that after vaccination, a great many persons were obliged to continue to work at their usual avocations, so that the muscles which should have had rest were kept in a state of undue exercise and tension, and so that the swelling was more diffuse, and the areola in every way larger, harder, and more painful than would have occurred under more favorable circumstances. Very often the vesicle was ruptured, and suppurative inflammation, indefinitely protracted, would supersede, at the point of inoculation, the specific process which develops the vaccinal growth, while the process of ulceration would abrade the tissues to a greater or less extent, sometimes excavating considerable cavities. As a rule, arms in this condition, although they had an ugly look, were not complained of as giving much pain; and this led to neglect of treatment in many cases, so that the ulceration would continue for six or eight, and even for ten or twelve weeks. The treatment

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was simple enough. It was only necessary to give the arm a few days rest; to apply a poultice to clean out the ulcer, and to sooth whatever irritation might be present; and then to cover the ulcerated surface with dry calomel or bismuth, or to dress it with astringent and slightly stimulant lotions or ointments. Most frequently the ulcer was raw and open, but sometimes the process of ulceration went on under the cover of scabs, which grew continually larger and thicker. Often these scabs presented in their appearance nothing specially remarkable; but in a good many cases they were exceedingly thick, rough, and corrugated, and of almost stony hardness—very similar to the huge oyster-shell crusts that are so characteristic of rupia. But even in these cases, healing was easily induced, and no permanent bad consequences remained.

Erysipelas, in its milder forms, was not uncommon, but it was rarely of so serious a character as to occasion any considerable amount of suffering. Only one instance came to my knowledge in which it inflicted any permanent injury. This was a young lady, who suffered to such extent that her life at one time was in great danger. Large portions of the tissues of the arm became gangrenous and sloughed off. She finally recovered her general health, but the arm was left permanently disabled to such extent as to be almost useless.

Tetanus.—Since tetanus may follow a wound of any sort, and however slight, it is one of the accidents that might reasonably be expected to result occasionally from vaccination; but I do not remember that any such case has been heretofore reported. We had one case. A little girl, white, was vaccinated by one of the physicians of the Board of Health. A good vesicle was formed in due time, and several children were vaccinated from it by the old women of the neighborhood, who managed to use their lancets and needles in such way as to provoke a good deal of local irritation. I am not able to say whether it was on account of the vaccination, or whether it was on account of this subsequent irritation; but about the twelfth day, symptoms of lock-law made their ap-

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pearance; and after a few days of dreadful suffering, the child died of traumatic tetanus. This was the only death we had which had any presumable connection with vaccination.

Exanthemata.—We noticed a considerable number of skin diseases accompanying or following our vaccinations. Sometimes the eruption assumed an erythematic, and sometimes a scarlatinal appearance. More frequently the eruption presented itself in the form of herpes, the wheals being sometimes large and many, and attended with disagreeable burning and itching. In a considerable number of cases the eruption was vesicular. The vesicles were sometimes small, and resembled those of chicken-pox; and sometimes quite large, like pemphigus. It was sometimes scattered over the whole body, but more often was confined to the vaccinated arm or side. Generally these eruptive complications yielded very readily to very simple treatment, nothing more being required in the larger number of cases than a mild purgative and a few doses of quinine. It is a question whether the eruptions were occasioned by the inoculation of alien and adventitious poisons along with the vaccine, or whether the pathological commotion excited by the vaccination incidentally aroused into action some latent predisposition of the system. In the immense majority of the cases I am satisfied that the latter explanation is the true one.

PROBLEMS IN VACCINATION.

Revaccination.—A very abundant experience has demonstrated the great practical value of revaccination, and I have already said as much in reference to this as is necessary or desirable; but there are several questions connected with the theory and practice of revaccination which have not yet been treated of; such, for example, as these that follow:

What is the effect of revaccination in cases where the protective influence of the primary vaccination has not been exhausted? There is no reason why we should not suppose that when the protective influence of the primary vaccination has been completely lost, the secondary vaccination will in

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every way produce the same results as if the vaccine had been planted in virgin soil—that there will be the same period of incubation, that the vesicle will pursue the regular course of vaccinal development, produce the characteristic umbilicated translucent crust, and leave upon the integument the specific depressed and pitted cycatrix, just as if no previous vaccination had been performed. It would also seem reasonable, and even necessary, to suppose that such secondary vaccination would confer the same immunity against small-pox as would a successful primary vaccination; and that it would produce lymph or crust of fully developed prophylactic potency.

If the influence of the original vaccination had only been partially exhausted, it would still afford a partial protection both against small-pox and against vaccinia, so that a subsequent vaccination would not pass regularly through all the stages of vaccinal development—would not produce a true vaccinia, but a sort of vaccinoid, bearing the same relation to vaccinia that varioloid bears to variola. The several stages of the pathological movement would be abbreviated and otherwise modified; the resulting cycatrix would be more or less imperfect; and the lymph and crust produced, while endowed perhaps with a certain measure of prophylactic power, would have their characteristic properties so changed and weakened as to be exceedingly unreliable.

If the protective influence of the original vaccination remained without diminution, then the presumption would be that the subsequent vaccination would be without effect—that, in a word, it would simply fail to take. So far it would seem that we were walking upon firm ground and along a plain road. But now some incidental problems require to be considered.

We have seen how certain incidental dangers accompany primary vaccinations—how erysipelatous inflammations, phagedenic ulcerations, and sundry cutaneous eruptions are liable to present themselves as unwelcome *addenda* and *sequelæ* of the induced vaccinia; and we are therefore compelled to inquire whether these complications are also attendant upon

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revaccinations; and especially upon revaccinations that are only partially successful, and upon revaccinations that fail altogether. If the revaccination fails altogether—that is to say, if there is no development of local symptoms, there is no sufficient reason to anticipate incidental complications, so that this phase of the inquiry may be passed over without further notice. But upon the other phase of it there arises a very curious speculation, namely, this: Whether the incidental complications are greater as the vaccinal effect is greater, and less as it is less; or whether the incidental complications are greater in proportion as the vaccinal effect is less, and *vice versa*. At first sight this may seem to be a very foolish question, but it is one that has been seriously urged, and it may be that there is something in it. The argument on one hand is, that the more decided and powerful the vaccinal movement the more probable it is that it will rouse into malignant activity the lurking pathological predispositions and tendencies of the system. The argument on the other hand is, that, *per contra*, the more powerful the vaccinal movement, the more it will be able to sweep into its own stronger current all incidental and subordinate movements and tendencies, and the more these last will be incapable of separate and characteristic manifestation. Which of these hypotheses is the true one; or whether, like that famous race between the Nip and the Tuck, it is one of those cases in which sometimes one, and sometimes the other, and sometimes neither, has the best of it, I will not undertake to decide.

Vaccination after Exposure.—Belonging to this same region of transcendental and unstable speculation is the question—Whether, supposing the *contagium* of small-pox to be already introduced into the system, but as yet to have excited no pathological movement, the interposition of vaccination would be more likely to avert the impending attack or to promote its development. That under such circumstances vaccination would confer upon the system more or less protection, is the general opinion of physicians. Some, however, who have small faith in the prophylactic virtues of vaccination at its best, and

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who love, in all possible ways, to throw discredit upon it, have maintained that its real influence in the case supposed would be of quite a contrary character, and that the smouldering embers of infection, which if let alone might have continued harmless, might in this way be fanned into a pestilential blaze. The argument proceeds in this way. We know that in the wonderful chemical process of fermentation, between which and the equally wonderful pathological process of zymosis so many analogies have been traced, there are certain fermentations which can not be set a-going except through the stimulating influence of another sort of fermentation. Again, we have just seen that the excitation set up in the system by vaccination is believed to favor the incidental development of latent constitutional predispositions, so as to determine, for example, an eruption of herpes or of pemphigus. In some analogous way, it is contended, will the pathological excitement of vaccination rouse into mischievous activity germs of infection which might else have been safely expelled from the system, and provoke explosions of small-pox which otherwise might have been escaped. This speculation must forever remain a speculation; because we have no means of ascertaining when the supposititious conditions present themselves; and hence have no basis for the experimental verification, or the experimental refutation of the hypothesis. In the present state of our knowledge, I have no hesitation to lay it down as an invariable rule of practice, that all unprotected persons who have been exposed to the infection of small-pox ought to be vaccinated as speedily and as thoroughly as possible. The number of those who are naturally insusceptible of small-pox is extremely small, probably not so many as one in a hundred thousand. The disease is, perhaps, the most loathsome and most dangerous that is known amongst men; and it is plainly the duty of every intelligent person to interpose every possible obstacle against its propagation. I should regard it as little less than criminal in any physician to discourage vaccination after exposure because of any transcendental crotchet which he had allowed to puzzle his judgment.

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We had many illustrations of this sort of folly during our epidemic; but I will relate only one. This occurred in the family of a homeopathic practitioner. There was small-pox in the immediate neighborhood, but he neglected to have his family vaccinated. At length one of his sons sickened of small-pox and had a very severe attack. He still neglected to vaccinate, upon the ground that he did not think it safe to vaccinate in the midst of an epidemic; and upon the further ground that he was not willing to use humanized virus. Now mark what followed. His children were very pictures of health. They were not allowed to enter the sick room. They were subjected to a course of homeopathic preventive treatment. And yet, in spite of all this, four more of them had the disease, making five in all. There is no question that all of these cases could have been prevented by timely vaccination.

Vaccination during Pregnancy.—Many physicians have opposed the vaccination of pregnant women, upon the ground that it might produce abortion. I am not aware that this prejudice ever had any foundation of facts to stand upon. At any rate, it has been completely shattered by the concurrent testimony of all recent observation. Dr. Jameson reports, in the Philadelphia Medical Times, June, 1872, that over one hundred pregnant women were vaccinated and revaccinated in the obstetrical wards of the Philadelphia Hospital without any unfavorable result. Dr. Goodell, the physician to the Preston Retreat, vaccinated and revaccinated over one hundred and fifty pregnant women who were in the last months of their pregnancy, and in no single instance was any ill effect produced. (See Obstetrical Address before Pennsylvania Medical Society, 1873.) In Mobile the number of pregnant women who were vaccinated is not known; but it was considerable, and I have heard of no instance in which any injury resulted either to the mother or to the child.

Vaccination of Infants.—I have just mentioned the vaccination of over one hundred and fifty pregnant women at the Preston Retreat. The infants of these women were also vaccinated

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and within the first week after their birth. Here is what Dr. Goodell says of the results: "One noteworthy feature was, that in most of them repeated operations wholly failed; another, that in those that 'took' the periods of incubation and of maturation were shorter than natural. To these phenomena we are disposed to attach no other significance than that of the well known resistance of very young infants to contagious diseases, which would tend either to prevent or to modify the vaccine impression. The idea was at first entertained that the recent vaccination of the mothers had protected the children. But this was disproved by the fact that two of the children were subsequently attacked at home by small-pox and died; and that cases have occurred in which a protected woman has given birth to a variolous child."—*Boston Medical and Surgical Journal, June, 1873; and Chicago Medical Journal, May, 1873.*

My individual experience in the vaccination of young children has not been large; but I have never had any special difficulty in getting the vaccination to take. My cases have differed from those of Dr. Goodell, in the fact that the mothers had not been vaccinated just before delivery; and notwithstanding the evidence which Dr. Goodell adduces to sustain the contrary proposition, I am obliged to believe that the vaccination of the mother during pregnancy does exert more or less of protective influence upon the system of the child. The fact that a protected mother may bear a variolous child, if, indeed, it be a fact, and not a mistake, although very curious in itself, goes but a little way towards proving Dr. Goodell's conclusion, if, indeed, it might not be more justly invoked in opposition to it. In these cases, the small-pox poison must have passed through the body of the mother before it could reach the fœtus; and the blood was most probably the medium of transmission. We know, also, that a variolous woman may certainly infect her unborn child with small-pox. Such cases, indeed, are not rare; and I have myself seen several. Now, if the poison of small-pox can be transmitted from the pregnant woman to the unborn fœtus,

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and this so as to inflict small-pox upon the child while it is still within the womb, it would seem reasonable to believe that the poison of vaccinia, which is very closely allied to that of small-pox, both physically and etiologically, might also be transmitted in the same way and through the same medium. It is to this cause chiefly that I would ascribe the insusceptibility of Dr. Goodell's cases. It may be granted that the protection thus afforded would be more transient than that resulting from vaccination after birth; and this for two reasons: (1) Because it may be that the impression made upon the system is less profound; and (2) because the organism undergoes more rapid changes immediately after birth than at any other period of its atmospheric life. I have thought that the mother protected by vaccination performed months or years before her pregnancy, might transmit some measure of immunity to her offspring which might not be completely lost for several years after their birth; and that some part of the smaller proportional mortality of children in small-pox epidemics might be due to this cause. At the same time, I am fully aware that the larger part of the difference between infant and adult mortality in this disease admits of another explanation, namely, that the children have been more recently vaccinated. This question of the hereditary influence of vaccination opens a wide field of speculation. Inasmuch as it is an established law of nature that the children shall inherit the constitutional peculiarities, immunities, and tendencies of the parents, it does not seem to me to be altogether absurd to suppose that if vaccination were thoroughly practiced for a sufficient number of generations, a race of human creatures might be produced who would be naturally proof against small-pox.

The subject of physiological toleration has been but little studied; and what little knowledge of it we have relates to the tolerance which can be acquired gradually by long habit in the use of certain chemical poisons, such as arsenic and opium. Is it not possible that the organic poisons which act as living creatures within the organism may come also under

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the same law? We had a little negro child who was born in our small-pox hospital, and lived for months in an atmosphere reeking with the poison of small-pox, without contracting the disease. He lay constantly not only in the small-pox wards, but upon the very same beds with the small-pox patients. He was vaccinated repeatedly without effect, and never at any time exhibited a single suspicion of variola or of varioloid. Investigating this remarkable case, I learned that his mother had been vaccinated some years before. During her pregnancy one of her older children had small-pox, and was nursed by her. She was not aware of having had small-pox herself, and presented no signs of it; but she had some febrile symptoms for a day or two which might have been of variolous origin; and some weeks afterwards the boy was born, under the circumstances that I have mentioned, with an immunity against small-pox as absolute as ever Mithradates had against the poisons of Pontus. Was not this a case of hereditary immunity consequent upon the influences of the maternal environment?

Vaccination as a Test of Protection.—It is commonly believed that if a person takes vaccinia, it is an indication that his system was in a condition susceptible of small-pox. This may be generally true, but it is not a rule without exception. I have known a considerable number of persons who had been exposed to the infection of small-pox enough to have contracted the disease a dozen times over, nursing and handling small-pox patients for weeks and weeks together with impunity; but when these same persons were afterwards vaccinated, the vaccination proved successful, and ran regularly through its several stages. It is highly probable that if these persons had been inoculated with small-pox virus, they would have had either variola or varioloid, most likely the latter; but they were sufficiently protected to escape infection through the natural channels.

Time Required to Establish Vaccinal Protection.—The protective influence of vaccination cannot be considered as complete until the vaccinia has reached its fullest development,

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and commenced to decline. This occurs about the eighth day, when the vaccine vesicle has finished its growth, and its dessication begins. The period of incubation of small-pox is from twelve to fourteen days. The period of incubation of vaccinia is from three to four days, and four or five days more completes the growth of the vesicle, so that there is usually ample time after the exposure for vaccination to be performed, and its protective influence secured, before the variola has completed its incubation. But suppose five or six days have elapsed since the exposure, does vaccination then offer any promise of advantage? Of course we cannot predict protection with so much confidence, but even then the vaccination should be done. For it may be that the incubation of the small-pox germs did not commence immediately, and there may still be time for the vaccination to succeed in its beneficent work. Or it may be that it will be sufficiently advanced in less time than eight days to turn the doubtful scales to the side of safety. And at the worst, I am satisfied that if the vaccination is too late to prevent the outbreak of the variola, it will neither hasten its advent nor increase its severity. It is even held by some authorities that vaccination after the initial fever has declared itself, modifies the attack and makes it less dangerous. My experience does not enable me to give an opinion on this point; but I have seen many cases in which the vaccinia and the variola finished their incubative stages at about the same time, and in which the vaccine vesicle passed regularly through all its stages concurrently with the regular progress of the variola. In some of these the variola has proven to be mild and discrete, while in others I have seen it confluent and severe. I cannot now recall to mind that any of these cases died. Whether the variolous disease was favorably modified by the influence of the vaccination, can be nothing more than a matter of opinion; and my opinion is that it was.

The Anatomy and Physiology of the Vaccine Vesicle.—I have already indicated that the vaccine vesicle is a growth—a *quasi* living organism, endowed with definite powers of ap-

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propriation, and with a specific faculty of assimilation which converts everything that contributes to its nutrition into its own nature. The location of the vesicle is among the epithelial elements of the derma. Not only so, but the epithelial cells take part in the growth of the vesicle, and it is through their agency that it becomes many-chambered. The chambers are filled with transparent lymph, composed, as we saw in an earlier part of this essay, of an albuminous fluid, in which are suspended minute particles of bioplasm, which are less, as a rule, than the one-twenty-thousandth of an inch in diameter. To these are sometimes added a few leucocytes, which are doubtless wandering white blood-corpuscles. The vesicle attains its fullest development in about eight days, after which the lymph gradually concretes into a crust, which becomes harder and dryer day by day, until the whole mass is firm and tough, not brittle, and friable, and opaque, like a scab of concreted pus, but of a consistency approaching that of horn, only not so hard. It is usual to speak of the conversion of the vesicle into a pustule. But this is incorrect; the vaccine vesicle has no pustular stage. The crust remains adherent to the derma, out of which the vesicle grew as if by roots, until from the fifteenth to the eighteenth day, and sometimes, perhaps, until after the twentieth day, when its organic attachments give way, and it can be removed without violence. It is important to understand that this act of separation between the crust and the derma is a vital act, of the same character as that which separates an apple when it is ripe, or a leaf when it is mature, from the stem on which it grew. It commences at the margin of the crust, and advances gradually in concentric rings toward the center, until it is complete. I believe that it is usually completed in less than eighteen days, although it may happen that the edges of the crust may be glued to the surface by a ring of hardened pus, which has formed around it. When it is intended to employ the crust for vaccination, it should be removed as soon as it is fully ripe. I would prefer not to wait longer than sixteen days; and if the crust is still found to be attached

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by a central stem, it may be clipped off with a pair of scissors. The reason why the crust should be removed as soon as possible, is that on the arm it is subject to influences that are not favorable to its preservation, the heat alone being sufficient to destroy it in a few days. The typical crust is indented on the external surface, and usually more or less convex on the surface that was in apposition with the skin, although sometimes this surface is nearly flat. When held between the eye and the light, it is seen to be translucent. The color is sometimes a light, and sometimes a deep amber, sometimes a dark mahogany, and sometimes almost an ebony black, depending always upon the color of the skin upon which it grew, the darker the skin, the darker the crust, and *vice versa*. The cells of dermal epithelium which participate in the formation of the vesicle, remain embedded in the crust. Some of these are pigment cells, and it is from these that the crust obtains its color. It is possible, by looking at the crust, to tell whether it grew upon a blonde, a brunette, a mulatto, or a negro. Vaccine lymph is not properly soluble in water, but it is miscible. The same is true of the concrete lymph of the crust; but usually there is a part of every crust that will not mix with water. This consists of the debris of epithelial cells; and is at the same time harmless and worthless —dead epithelium and living vaccine being very different things.

In the practice of vaccination, it is important that none but perfect crusts should be used. But if, through carelessness or accident, the stock has been allowed to deteriorate, by proper management it can be restored to its pristine excellence. Take the central portions of the best crust that can be had; plant it in young and healthy subjects; guard the resulting vesicles against accidental injuries; and select for use the best crusts of the successive crops. For the preservation of the crusts, I know of but two rules that need to be followed: (1) The crusts must be kept cool; (2) they must not be allowed to become thoroughly dessicated. The heat of boiling water destroys the life of the germs very rapidly; a

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heat of eighty or ninety degrees will also destroy them, but more slowly. I am not prepared positively to assert that dessication alone will destroy the vitality of the germs, but I believe that it will, and that the crusts retain their specific energy only so long as they retain a certain amount of moisture.

It is a popular belief that the germs of various minute creatures may be blown about by the winds in the shape of dry dust, and still retain their faculties of growth and development; but I know of no facts to warrant any such opinion. The winds themselves are not dry, in any strict sense of the word, and we have good reason to believe that the vitality of atmospheric germs is largely dependent upon atmospheric moisture.

The Comparative Value of Lymph and Crust.—I have very little practical familiarity with the use of lymph in vaccination, whether transferred upon the points of quills, or in capillary tubes, or directly from arm to arm. But upon such occasions as I have made use of it, I have not been able to observe that the development of the vesicle and the progress of the vaccinia differed in any way whatever from the results which follow vaccination with the crust. I have, therefore, reached very definitely the conclusion, that the protective influence of the crust is quite equal to that of the lymph. In all the considerations of economy and convenience, it has greatly the advantage of the lymph. It is easier to keep, and it keeps longer; it is always ready for use; and twice as many persons can be vaccinated from a single crust as from a single vesicle. In a word, it is safe to say that vaccination with the crust is not attended with half the trouble that attends vaccination with the lymph. I have said that I consider, from such observations as I have had the opportunity to make, that as a prophylactic, the crust is quite equal to the lymph; but there are not wanting authorities who consider it to be very much more than equal. It is contended that accidents are less likely to occur with the crust; that there is much less chance of inoculating, at the same time, blood or pus, and

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therefore that the danger of syphilitic contamination is greatly less. In Europe, it is the rule to use the lymph; in this country, it is the rule to use the crust. In an experience extending through three epidemics, I have not found that persons vaccinated in Europe are any better able to resist infection than those who have been vaccinated on this side of the ocean.

The Comparative Value of Humanized and Bovine Virus.—The whole subject of bovine vaccination is well discussed by Dr. Seaton, in his book on vaccination; and I will give but a very brief sketch of it here. Bovine virus cannot be cultivated very well, except in institutions specially devoted to that purpose; and these must be situated in the vicinity of cities, in order that a continuous supply of heifers may be conveniently and cheaply obtained. The usual custom is to get the heifers from the butchers, a small sum *per capita* being paid for the use of them for the requisite length of time, after which they are returned, with little, if any, injury from the process to which they have been submitted. To perform the inoculations, they are tied and laid upon tables; and any straggling hairs having been removed with a razor, the virus is introduced on the point of a lancet, the punctures being scattered over the udders and about the vulvæ, the skin in these localities being more tender, less obstructed by hair, and every way better suited to the purpose, than that which covers the rest of the body. When the vesicles are ripe, the persons to be vaccinated may be assembled together, and the heifer replaced upon the table for facility of manipulation; or the heifer may be driven from house to house. The bovine vesicles are small, and of course the crusts which they form are also small. As is the case in humanized virus, the crusts retain their virtues for a longer time than the preserved lymph.

The history of bovine vaccination must be briefly told. The practice was first regularly introduced in 18—, in the city of Naples, by Professor Negri, and after his death was continued under the auspices of Balbiati. From Naples it was brought

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to Paris by Dr. DePaul in 18—. Soon after this, a case of spontaneous cow-pox was discovered at Beaugency, and in Paris this new stock soon superseded that which had been derived from Italy. Within a few years institutions for bovine vaccination were established in other parts of France, and in Belgium and Holland. The practice seems not to have met with much favor in England, Mr. Seaton, who visited several of the continental institutions in behalf of the Privy Council, having reported adversely to its claims of superiority over vaccination with humanized lymph. It has attracted a good deal of attention in the United States, and institutions like those in Europe have been established in New York, Philadelphia, and Boston, and perhaps also in a few other American cities.

I can not give all the details of the evidence, but I consider that the following propositions in reference to the comparative merits of the bovine and the humanized virus, have been definitely established, namely:

That the humanized virus is equally efficacious as a prophylactic.

That the humanized virus is many times over less expensive and less inconvenient.

That the humanized virus can be preserved more easily and for a longer time, and is far more certain to take, the failures, even with fresh bovine lymph, more than doubling the successes.

That the only advantage that can be claimed with any show of reason for the bovine lymph is, that it is entirely free from syphilitic and other constitutional contaminations. This may be freely granted; but inasmuch as with the accumulated experience of generations, during which vaccination with humanized virus has been practiced in many millions of cases, it still remains doubtful whether vaccination is really answerable for even a single case of syphilitic infection, it seems to me that this claim is of little weight.

As the conclusion of the whole argument, I do not hesitate to recommend the use of the humanized virus in preference to

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the bovine, and of the crust in preference to the lymph, as being most available for the purposes of public hygiene.

The Curiosities of Vaccination.—While many of our Mobile negroes were violently opposed to vaccination, they were quite credulous as to the prophylactic value of various other devices. Among those most frequently resorted to was the wearing of little bags of garlic, or of assafœtida, suspended around the neck. These amulets were always very dirty and very nauseous, so that to question their efficacy was like calling in question the plainest testimony of the senses.

But the most remarkable example that I heard of was that of a negro woman who inoculated her four children with wax or cerumen from the human ear, a process which she stoutly maintained was a much more certain preventive of small-pox than vaccination. She stated further, that wax from the ear of a horse was much better than that obtained from the human subject. She had no other authority for her belief than that she had always been told so. The children were kept under observation, and all of them had very sore arms for about three weeks. One of my assistants humorously dubbed this unique practice *waxination.*

THE BOARD OF HEALTH.

The agency of the Board of Health in the suppression of the Epidemic, together with their methods of procedure, are deserving of more circumstantial account than I have yet been able to give of them; and this because their example and the results of their experience may furnish valuable suggestions to other boards engaged in work of a similar character.

As already stated, the Board of Health organized for action against small-pox on the 12th of November. It was composed at that time of Drs. Geo. A. Ketchum, Wm. H. Anderson, E. P. Gaines, John T. Gilmore, and C. C. Sherrard. Dr. Ketchum was elected President, and Dr. Sherrard Secretary of the Board; and the writer of this sketch was selected as the executive officer of the Board, with the title of Health-Officer. This organization of the Board remained unchanged

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during the continuance of the epidemic, with the exception that Dr. O. S. Iglehart was elected, in the first week in December, to take the place of Dr. Sherrard, both as member of the Board and as its Secretary.

The Health-Officer was notified of his election at 2 o'clock on the 12th of November, and instructed to prepare the outlines of a plan of action to be submitted to the Board at half past seven o'clock that evening. This paper was accordingly drawn up, was approved by the Board, and formed the basis of all their subsequent proceedings against the pestilence. It is here subjoined:

MEMORANDA OF PLAN OF ACTION FOR THE SUPPRESSION OF SMALL-POX.

Things to be done.

To vaccinate the whole population of the city as speedily as it can possibly be done, with the supply of vaccine virus which is available.

To make use of such measures of disinfection as are known to be efficacious against the poison of small-pox; and as may be warranted by the circumstances of the various cases.

To provide accommodations at the Pest-house for all pauper patients afflicted with small-pox, together with such medical and other attendance as may be needed.

To make immediately a general inspection of the city, so as to ascertain the number of small-pox patients already here, together with their names, colors, locations, &c.

Means for the accomplishment of these objects.

To employ a Health-Officer, who, under the supervision of the Board of Health, shall have control of all the sanitary measures ordered by the Board; and of all its agents and employees.

To employ a sufficient number of competent physicians to vaccinate from house to house, until the proposed thorough vaccination of the entire community has been accomplished.

To request the physicians of the city to report to the Board

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all their small-pox cases, and to furnish the Board with as much vaccine as possible.

To obtain from the Mayor a detail of Policemen to act as Sanitary Inspectors.

To establish a central Health-Office, and employ a competent clerk to keep the records, and do for the Board whatever writing may be necessary.

To have the Health-Officer prepare the requisite instructions for the vaccinating physicians, the sanitary inspectors, and all other employees of the Board.

To empower the Health-Officer to engage such nurses, servants, ambulances, medicines, disinfectants, etc., as may be necessary for the efficient prosecution of the work in hand.

In order to arouse the people to the importance of vaccination, a Circular Address was issued by the Board, and five thousand copies of it distributed by the Sanitary Inspectors. It is here subjoined:

The Board of Health has been reorganized for the purpose of checking the progress of small-pox. They feel perfectly confident that it can be checked provided they receive the proper assistance from the people of the city.

They particularly desire to impress upon all the importance of vaccination. That vaccination, properly done, is a complete protection from small-pox, is a demonstrated fact. If the people were all vaccinated, the prevalence of small-pox would be impossible.

The Board of Health therefore earnestly advises all heads of families to have themselves, their families, and their servants vaccinated as soon as possible; and inasmuch as the influence of vaccination is not always permanent, the Board also advises all who have been vaccinated heretofore, to be vaccinated again.

A great many will prefer to have this done by their family physician. But in order that all may be able to avail themselves of its benefits, vaccinating physicians have been employed, who will visit all quarters of the city, and vaccinate without charge.

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In addition to this, all applicants will be vaccinated free of charge at the Health-Office, on the north side of St. Francis street, between Joachim and Jackson.

In order to indicate the localities which were rendered dangerous by infection, it was ordered that a yellow flag should be displayed near the front entrance of every house in which small-pox was known to exist.

To prevent confusion and to facilitate business, the Health-Officer adopted the plan of issuing all orders in writing; and required that all reports should be made in the same way. The more important of the general orders issued by the Health-Officer, as indicating in detail the prophylactic measures adopted by the Board of Health, will be given presently in their original form. They were written in the midst of hurry and excitement, and are not given as models of style, nor, indeed, as models of any sort of excellence. I know very well that they might be greatly improved. It is because they played an important part in the history of the epidemic, that I have thought them worthy of preservation.

The servants employed by the Board of Health were as follows: One Health-Officer, one Physician to the Pest-House, eight Vaccinating Physicians, one Clerk, one Flag-Officer, one Disinfecting Officer, one Assistant Disinfecting Officer, ten Sanitary Police-Inspectors, one Special Police-Officer, one Ambulance-Driver, one Head Nurse for Pest-House.

The Health-Officer received orders from the Board of Health, made reports to them, and was responsible to them for the execution of all the measures they saw fit to order. All the other employes of the Board were under the direction of the Health-Officer, got their orders from him, made their reports to him, and were responsible to him for the discharge of their respective duties.

The duties of the Pest-House Physician are sufficiently indicated in the following General Order, which was issued for his guidance by the Health-Officer:

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MEMORANDA FOR THE OBSERVANCE OF THE PHYSICIAN OF THE PEST-HOUSE.

To make a full report of the condition of the Pest-House at the time of his taking charge of it.

To include in this report the following items:

1. A schedule of the beds, bedding, furniture, kitchen and other utensils, ambulances, horses, etc.

2. A schedule of nurses and other employes, giving names, colors, wages, and date of employment.

3. A schedule of patients, giving names, colors, ages, sexes, character of attack, where contracted, when contracted, and when received at the Pest-House.

He will also make out immediately a schedule of such articles as he may think will be needed for the accommodation of twenty-five patients, including bunks, bed-sacks, blankets, sheets, shirts, medicines, provisions, untensils, and sundries.

For the future, he wil make daily reports to this office, to include the following items of information: 1. Patients received at the Pest-House, names, colors, sexes, character of attack, where and when contracted. 2. Patients discharged from the Pest-House, names, whether dead or recovered.

He will also mention any other items of information necessary for the use of the Board, and make requisitions, from time to time, of anything he may need.

The duties of the Vaccinating Physicians are laid down in the following General Order, which was issued for their guidance by the Health-Officer:

INSTRUCTIONS TO THE VACCINATING PHYSICIANS.

It is the object of the Board of Health to secure to every inhabitant of the city of Mobile, the protecting influence of vaccination. To secure this end as thoroughly and rapidly as possible, the Vaccinating Physicians will visit every house in the localities of the city severally assigned to them by the Health-Officer. They will make careful inquiry in regard to the tenants in upper stories and of back yards, so that no-

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body may be overlooked. They will vaccinate *everybody*, except those who are in any way seriously sick, those who have recently recovered from small-pox or varioloid, those who have been recently successfully vaccinated, and those who prefer to have their vaccination done by their usual medical attendants; even those who exhibit marks of successful vaccination of several years standing, must be vaccinated again; and those who have been recently vaccinated, must be vaccinated again when they live in infected houses or localities.

They will be courteous and considerate to all, even the humblest, but at the same time will be resolute in the discharge of their duties.

They will use no vaccine except such as is issued to them by the Health-Officer, will secure for the Health-Officer such vaccine crusts as they are able to obtain, keeping separate that obtained from whites and blacks, respectively.

They will mix the vaccine on glass plates with cold water, which plates, together with the lancets used, must be carefully cleansed every day.

They will report every evening to the Health-Officer, giving a full account of the day's work, including the names, ages, colors, and locations of all persons vaccinated by them, together with the statement whether they have been previously vaccinated or not.

They will report daily to the Health-Officer all cases of small-pox which may come to their knowledge, giving localities, names, ages, and colors, and whether they have proper attendance.

They will report daily all cases who refuse to be vaccinated, giving, name, locality, color, and circumstances.

They will report anything which comes under their observation of a character likely to be of use to the Board of Health.

The duties of the Sanitary Inspectors are indicated in the following General Order, which was issued for their guidance:

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INSTRUCTIONS TO THE SANITARY INSPECTORS.

The Sanitary Inspectors will go from house to house, in the districts severally alloted to them by the Health-Officer.

They will visit every house, and make careful inquiry as to the tenants of upper stories and houses in back yards.

They will treat everybody with courtesy and respect; will leave at each house one of the circulars furnished by the Board of Health, and will make careful inquiry at each house whether there is any small-pox in it.

They will report immediately to this office an account of every case of small-pox discovered, give name, color, age, locality, and whether under medical treatment or not, and if under treatment, the name of the attending physician.

They will also make to this office a daily report of the extent of their work for the day, stating the streets or parts of streets inspected, and the number of houses visited.

The Sanitary Inspectors were detailed from the Police Force of the city, and were returned to it as soon as their canvass of the city was finished. This required two weeks.

The duties of the Disinfecting Officer are prescribed in the following General Order, which was issued for his guidance:

INSTRUCTIONS FOR DISINFECTION.

The agents for disinfection employed by the Board of Health will be three; and they will be used in the order in which they are named.

First, Boiling Water; second, Sulphur Fumigation; third, Ventilation.

1st. The poison of small-pox being a living organic poison, is absolutely destroyed by boiling water, or by an equivalent amount of heat applied in any other way. All articles of clothing and bedding used by small-pox patients should be placed in proper vessels and thoroughly boiled, and the floors and walls of their rooms, together with such articles of furniture that will bear that sort of treatment, should be thoroughly scalded with boiling water.

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2d. After the abundant use of hot water, the infected rooms should be fumigated with sulphur. That this fumigation may be thoroughly done, the rooms must be made perfectly close by sealing up broken window-panes, fire-places, and other openings. The sulphur will then be ignited in suitable vessels and the rooms kept closed for at least twelve hours. One pound of sulphur will be used for one thousand cubic feet of space.

3d. After the lapse of the necessary interval of time, the disinfecting officer will again visit the premises which have been fumigated and see that they are properly ventilated. Doors and windows should be opened so as to admit the fresh air, and fires should be kindled so as to create a draught up the chimney. Before the disinfection of a room is commenced the convalescent patient should be well washed with soap and water, clothed with fresh and clean garments, and moved into some other apartment. Usually, of course, this will be directed by the attending physician. After the fumigation it would be well if all the wood-work about the room was well washed with soap and water, and white-washing and painting would then form an appropriate winding up of the work of purification.

Dating from the commencement of the fumigation, the quarantine flag will be allowed to remain four days. It will then be removed by the disinfecting officer, and returned to this office.

It was the duty of the flag-officer to put up the yellow flags which were used for the designation of infected houses, and to get the histories of the cases. After the first rush of work was over this officer was discharged, and his work devolved upon the disinfecting officer.

It was the business of the clerk to keep all the books, records and accounts of the Health-Officer. At first, for ten or fifteen days, it was found necessary to give him an assistant.

The duties of ambulance-driver and head nurse hardly stand in need of explanation. The cooks, washers, subordi-

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nate nurses, and other attendants in the hospital were obtained from the convalescents and from the persons who, while well themselves, went to the hospital with their sick friends, such as mothers with sick children, etc. These received no other pay than food and shelter.

The energetic action of the Board of Health met with appropriate reward. They undertook to relieve the city of small-pox, and did it. Let none think that it was an easy thing to do. It has been attempted often, but I know of no other instance in which under similar circumstances anything like a similar success has been achieved. Often enough the first advances of a pestilence have been successfully resisted; but I know of no other instance in which, after the epidemic was under full headway, and in the very season of the year most favorable for its rapid progress, it has been met and conquered. As we have seen, this same disease in New Orleans has maintained its ground for five successive years, and is still at this very time raging in that city with a virulence as great as ever. The same is true of New York, which was invaded about the same time as New Orleans, in which it has maintained itself with the same pertinacity, and where the prospect is, that notwithstanding all the immense resources of that great metropolis, the pestilence will claim a larger tribute of human lives during the present spring than during any other season since its advent there. The epidemic in Mobile did not die out of itself, but was overpowered and destroyed by the agencies that were employed against it.

We made some mistakes; but when it is recollected that we had no examples to follow, but had to depend upon our own resources, the wonder will be, not that we made some mistakes, but that we did not make a great many more than we did.

FINANCIAL STATEMENT.

The history of the epidemic would not be complete without some account of the expenses incurred in its suppression. A monthly statement of expenditures is therefore subjoined:

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Statement of Expenditures incurred by the Board of Health, in the suppression of the Small-pox Epidemic, for the six months ending April 30, 1875.

1874.			
Nov. 30.	Salaries of employees	$800 96	
	Expense account	393 13—	$1,194 09
Dec. 31.	Salaries of employees	1176 00	
	Expense account	455 60—	1,631 60
1875.			
Jan. 31.	Salaries of employees	805 50	
	Expense account	346 53—	1,152 03
Feb. 28.	Salaries of employees	609 00	
	Expense account	644 17—	1,253 17
Mar. 31.	Salaries of employees	630 00	
	Expense account	527 97—	1,157 97
April 30.	Salaries of employees	287 78	
	Expense account	61 15—	348 93
	Total		$6,737 79

Add to this the cost of Hospital and Outfit, and we have as follows:

Amount paid by the Mayor for the construction of the Pest-house	$2,585 00
Amount expended for Sheets, Blankets, Bed-sacks, and Shirts	300 00
	$2,885 00
Expenditures by the Board of Health	6,737 79
Grand total of all expenditures	$9,622 79

The amount paid to vaccinating physicians was $1,330; the number of vaccinations done was about 6,500; so that the cost *per capita* was a little more than 20 cents.

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THE DISEASES AND MORTUARY STATISTICS OF THE CITY OF MOBILE FOR THE YEAR 1874.

In the medical history of the city of Mobile for the year 1874, there is to be found nothing of special importance, except the widespread epidemic of small-pox which spread generally over the city, to the extent of more than one thousand cases. A full account of this is given in another place, so that it seems necessary here only to give the usual mortuary and meteorological tables.

For the tables of meteorology I am indebted to the courtesy of D. O'Donoghue, M. D., of the United States Signal Service.

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ABSTRACT OF DEATHS IN MOBILE FROM ALL CAUSES DURING THE YEAR 1874.

CAUSES OF DEATH.	WHITES.		BLACKS.		Totals.
Class I.—Zymotic Diseases.	Males	Females	Males	Females	
Small-pox	19	14	72	61	166
Diptheria	5	6	3	5	19
Whooping Cough	....	2	1	4	7
Erysypelas	2	1	....	....	3
Pyæmia	....	....	1	....	1
Leucocythemia, malarial	....	1	....	....	1
Septicæmia	1	....	....	....	1
Dysentery	2	5	1	2	10
Diarrhœa	7	3	9	4	23
Cholera, sporadic	....	....	....	1	1
" infantum	2	4	2	3	11
Entero-Collitis	2	2	....	....	4
Intermittent Fever	1	....	....	2	3
Remittent Fever	2	....	8	2	12
Congestive Fever	3	3	....	1	7
Typho-Malarial Fever	1	....	....	....	1
Bilious Colic	....	....	....	1	1
Brain Fever	1	1	....	....	2
Yellow Fever	3	3	....	....	6
Typhoid Fever	....	2	1	2	5
Hæmorrhagic Malarial Fever	....	....	1	....	1
Syphilis	1	....	2	1	4
Alcoholism	2	....	....	....	2
Total Zymotic Diseases	54	47	101	89	291
Class 2.—Constitutional Diseases.					
Gout, rheumatic.	1	....	....	....	1
Rheumatism	1	1	1	....	3
Dropsy	1	....	5	6	12
Jaundice	....	1	....	....	1
Cancer	....	1	....	3	4
" of Stomach	2	3	....	1	6
" Uterus	....	3	....	2	5

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ABSTRACT OF DEATHS IN MOBILE—Continued.

CAUSES OF DEATH.	WHITES.		BLACKS.		Totals.
Class 2.—Constitutional Diseases.	Males	Females	Males	Females	
Cancer of Pancreas	....	....	1	....	1
" Lungs	....	....	....	1	1
" Breast	....	....	....	1	1
" Eye	1	....	....	1	2
Phthisis Pulmonalis	35	34	23	41	133
Tabes Mesenterica	6	4	19	13	42
Scrofula	2	1	2	2	7
Hydrocephalus	2	3	3	....	8
Total Constitutional Diseases	51	51	54	71	227
Class 3.—Local Diseases.					
Meningitis	8	4	12	9	33
Compression of Brain	....	....	1	....	1
Mania, acute	1	....	....	....	1
Encephalitis	4	3	2	1	10
Softening of Brain	1	1	6	....	8
Abcess of Brain	1	....	....	....	1
Thrombosis, cerebral	2	3	....	....	5
Ptyalism	....	1	1	....	2
Apoplexy	10	7	....	4	21
" pulmonary	....	....	1	....	1
Epilepsy	4	....	...	1	5
Convulsions	9	11	16	19	55
Coma	....	....	....	1	1
Paralysis	3	1	2	....	6
Paraplegia	1	....	....	....	1
Hemiplegia	1	1	....	....	2
Paresis, cerebral	1	....	....	....	1
Tetanus	3	4	1	1	9
Trismus Nascentium	10	3	14	26	53
Sun-stroke	2	....	1	1	4
Valvular Disease of Heart	8	4	6	8	26
Fatty Degeneration of Heart	....	1	1	....	2
Angina Pectoris	2	....	1	....	3
Pericarditis	2	....	....	....	2

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ABSTRACT OF DEATHS IN MOBILE—Continued.

CAUSES OF DEATH.	WHITES.		BLACKS.		Totals.
Class 3.—Local Diseases.	Males	Females	Males	Females	
Hypertrophy of Heart	....	1	....	....	1
Carditis	2	....	....	....	2
Œdema of Lungs	....	....	1	....	1
Congestion of Lungs	1	2	....	....	3
Hæmorrhage of Lungs	1	....	....	1	2
Abcess of Lungs	2	....	....	....	2
Pneumonia	16	2	7	15	40
Pleurisy	....	1	1	....	2
Larangytis, tubercular	3	....	....	1	4
Œdema of Glottis	1	....	....	1	2
Bronchitis	1	3	7	5	16
Hydrothorax	1	....	....	....	1
Asthma	1	...	1	1	3
Gastritis	....	2	....	....	2
Enteritis	3	2	....	....	5
Gastro-Enteritis	2	1	1	2	6
Abcess	....	....	1	....	1
Hypertrophy of Liver	1	....	...	....	1
Fatty Degeneration of Liver	1	....	....	....	1
Cirrhosis of Liver	....	1	....	....	1
Abcess of Liver	3	....	....	....	3
Hepatitis	3	2	....	....	5
Nephria (Bright's Disease)	14	4	11	6	35
Congestion of Kidneys	1	....	....	....	1
Retention of Urine	....	....	1	....	1
Congestion of Stomach	....	1	1	....	2
Ulceration of Stomach	....	....	1	....	1
Congestion of Bowels	1	....	....	....	1
Ulceration of Bowels	....	1	....	....	1
Inflammation of Bowels	....	3	2	....	5
Hæmorrhage of Bowels	....	1	....	....	1
Obstruction of Bowels	....	....	1	....	1
Cystitis	....	....	1	....	1
Hæmorrhage of Uterus	....	1	....	....	1
Ovarian Disease	....	....	....	3	3
Atheroma	1	1	....	1	3

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ABSTRACT OF DEATHS IN MOBILE—Continued.

CAUSES OF DEATH.	WHITES.		BLACKS.		Totals.
	Males...	Females.	Males...	Females.	
Class 3.—Local Diseases.					
Emphysema	1	....	....	....	1
Stricture of Esophagus	1	....	....	....	1
Hæmorrhage	1	....	....	....	1
Peritonitis	1	...	2	....	3
Strangulated Hernia	2	....	....	....	2
Scrofulous abscess of thigh	....	....	....	1	1
Inanition	3	4	2	....	9
Intussusception	1	....	1	....	2
Uræmia	3	1	....	....	4
Myelitis	....	1	....	....	1
Caries of Spine	1	....	....	....	1
Gangrene	....	....	1	....	1
Total Local Diseases	146	79	168	108	441
Class 4.—Developmental Diseases.					
Premature Birth	9	3	10	10	32
Cyanosis	1	....	....	....	1
Umbilical Hæmorrhage	....	....	1	....	1
Morbus Coxarius	....	1	....	....	1
Chlorosis	....	1	....	....	1
Puerperal Metritis, or Fever	....	2	....	3	5
Puerperal Convulsions	....	4	....	1	5
Teething	1	4	6	8	19
Old Age	5	4	9	7	25
Asthenia	3	12	1	1	17
Total Developmental Diseases	19	31	27	30	107
Class 5.—Violent Deaths.					
Fractures and Contusions	6	...	5	....	11
Wounds, gun-shot	1	....	....	....	1

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ABSTRACT OF DEATHS IN MOBILE—Continued.

CAUSES OF DEATH.	WHITES.		BLACKS.		Totals.
Class 5.—Violent Deaths.	Males.	Females.	Males...	Females.	
Wounds, pistol-shot	1	....	2	....	3
" penetrating	....	....	1	....	1
" burns and scalds	1	....	2	2	5
" railroad accidents	3	....	3	....	6
Drowning	7	....	10	1	18
Suicide	4	....	....	....	4
Execution	1	....	....	....	1
Trephining skull for Epilepsy	1	....	....	....	1
Total Violent Deaths	25	....	23	3	51
Unknown	2	1	5	3	11
Still-born	3	2	3	6	14
RECAPITULATION.					
Total Zymotic Diseases	54	47	101	89	291
Total Constitutional Diseases	51	51	54	71	227
Total Local Diseases	146	79	108	108	441
Total Developmental Diseases	19	31	27	30	107
Total Violent Deaths	25	....	23	3	51
Grand Totals	295	208	313	301	1,117
Add deaths from unknown causes	2	1	5	3	11
	297	209	318	304	1,128

Children under 1 year 351
Children from 1 to 5 years 178
Total number of white males 297
" " " females 209
" " black males 318
" " " females 304
" " whites 506
" " blacks ..... 622—1,128

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STILL-BIRTHS OCCURRING IN THE YEAR 1874.

MONTHS.	WHITES.		BLACKS.		Totals.
	Males...	Females.	Males...	Females.	
January	3	....	2	1	6
February	1	3	2	1	7
March	....	3	3	1	7
April	3	1	4	1	9
May	3	1	2	2	8
June	1	2	2	1	6
July	....	....	4	1	5
August	2	3	2	7	14
September	1	1	2	3	8
October	2	1	3	4	13
November	1	4	6	1	12
December	2	1	6	1	4
	19	20	36	24	99

Total of whites 39
Total of blacks 60

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TABLE

Showing Daily and Monthly Mean of Barometer and Thermometer, Monthly Velocity of Wind, and amount of Rainfall, with the prevailing direction of Wind, for the month of December, 1874, for the city of Mobile.

December, 1874.	TELEGRAPHIC OFSERVATIONS.						LOCAL OBSERVATIONS.				Prevailing direction of Wind.	THERMOMETER	
	BAROMETER.			THERMOMETER.									
	A. M.	P. M.	Mid-night.	A. M.	P. M.	Mid-night.	Mean daily Barometer.	Mean daily Thermom'ter	Mean daily Humidity.	Rainfall.		Maximum.	Minimum.
1	30.513	30.421	30.435	42	63	50	30.458	52.00	77.50	....	N-E.	....	....
2	30.443	30.308	30.301	43	65	57	30.342	55.75	89.75	....	S.	....	....
3	30.305	30.180	30.243	52	66	59	30.239	59.25	87.25	....	S.	....	....
4	30.286	30.207	30.263	54	70	56	30.254	59.75	64.75	....	N-E.	....	....
5	30.276	30.173	30.124	53	63	60	30.176	60.25	69.25	....	E.	....	....
6	29.973	29.943	30.037	56	56	53	29.994	55.25	89.50	.80	N.	....	....
7	30.095	30.082	30.265	46	58	47	30.188	50.25	56.75	....	N.	....	....
8	30.387	30.302	30.336	37	51	42	30.350	43.50	55.50	....	N-E.	....	....
9	30.367	30.277	30.303	36	55	47	30.318	47.00	80.50	....	S.	....	....
10	30.321	30.255	30.293	38	61	50	30.287	50.50	85.50	....	S.	....	....
11	30.339	30.284	30.311	43	57	47	30.317	49.00	86.25	....	N.	....	....
12	30.349	30.254	30.259	41	61	51	30.289	53.00	70.75	....	N.	....	....
13	30.225	30.163	30.197	51	63	55	30.190	56.75	87.50	.03	E.	....	....
14	30.199	30.243	30.316	58	59	55	30.253	58.00	92.00	.14	N.	....	....
15	30.380	30.279	30.292	38	56	51	30.308	48.25	71.50	....	N.	....	....
16	30.245	30.159	30.167	53	61	62	30.185	59.25	95.25	.15	E.	....	....
17	30.184	30.164	30.187	60	60	55	30.178	57.75	90.75	.03	N.	....	....
18	30.212	30.168	30.168	48	49	47	30.183	47.75	82.75	.61	N.	....	....
19	30.091	29.838	29.878	49	65	55	29.940	56.00	91.75	.53	S.	....	....
20	30.035	30.127	30.217	43	47	41	30.135	43.25	73.25	....	N.	....	....
21	30.176	30.151	30.103	38	52	51	30.138	48.00	76.25	....	S.	....	....
22	30.041	30.048	30.124	56	64	53	30.085	56.50	65.00	.05	N-W.	....	....
23	30.158	30.139	30.208	42	53	51	30.169	49.50	87.00	.39	N.	....	....
24	30.348	30.338	30.350	46	50	47	30.351	48.00	53.50	....	N-E.	....	....
25	30.288	30.157	30.118	46	45	49	30.181	47.25	88.25	1.18	E.	....	....
26	30.099	30.069	30.129	53	65	60	30.104	60.50	98.50	.10	S.	....	....
27	30.137	30.128	30.175	60	65	63	30.147	64.25	98.75	.06	S.	....	....
28	30.185	30.139	30.157	64	69	64	30.159	66.00	97.50	....	S.	....	....
29	30.211	30.194	30.224	60	70	67	30.215	67.50	96.00	....	S.	....	....
30	30.237	30.220	30.295	62	62	55	30.251	59.25	92.25	.05	N.	....	....
31	30.313	30.326	30.364	52	56	54	30.334	54.25	91.50	.05	N-E.	....	....
Means	30.239	30.185	30.220	49.22	59.25	53.35	30.216	54.30	82.01	....	....	....	....

Highest Barometer—30.513 at 6.51 A. M. of 1st.
Lowest Barometer—29.838 at 3.51 P. M. of 19th.
Highest Temperature—71 deg. on 4th and 28th.
Lowest Temperature—34 deg. on 9th.
Monthly range of Temperature—37 deg.
Greatest daily range of Temperature—27 deg. on the 12th.
Mean of Maximum Temperatures—61 deg. 64.
Mean of Minimum Temperatures—47 " 12.
Mean daily range of Temperatures--14 " 51.
Total Rainfall—4.17 inches.
Prevailing Wind—North.
Total number of miles traveled—4,605.
Maximum velocity of Wind—24 miles per hour.
Number of cloudy days, other than those on which rain fell,—4.
Number of days on which rain or snow fell—14.

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TABLE

Showing Daily and Monthly Mean of Barometer and Thermometer, Monthly Velocity of Wind, and amount of Rainfall, with the prevailing direction of Wind, for the month of November, 1874, for the city of Mobile.

November, 1874.	TELEGRAPHIC OBSERVATIONS.						LOCAL OBSERVATIONS.					THERMOMETER	
	BAROMETER.			THERMOMETER.									
	A. M.	P. M.	Mid-night.	A. M.	P. M.	Mid-night.	Mean daily Barometer.	Mean daily Thermometer	Mean daily Humidity.	Rainfall.	Prevailing direction of Wind.	Maximum.	Minimum.
1	30.382	30.268	30.320	36	54	44	30.322	44.56	48.50	....	N.	54	35
2	30.366	30.244	30.267	33	58	41	30.291	44.56	53.75	....	N.	59	32
3	30.292	30.166	30.208	36	66	48	30.222	49.00	50.50	....	N.	67	35
4	30.220	30.123	30.181	45	68	57	30.180	58.56	75.75	....	N.	71	42
5	30.219	30.154	30.222	53	72	63	30.207	64.50	80.75	....	N.	77	51
6	30.255	30.177	30.204	58	73	64	30.219	67.25	79.00	....	N.	79	57
7	30.233	30.105	30.136	57	77	72	30.159	70.00	72.75	....	E.	79	57
8	30.136	30.074	30.109	69	76	70	30.110	71.75	89.50	.06	S.	78	68
9	30.100	30.022	30.080	69	75	71	30.073	72.00	88.00	....	S.	78	68
10	30.108	30.045	30.088	72	75	75	30.079	74.50	80.00	.15	S.	77	71
11	30.140	30.035	30.089	70	76	71	30.093	72.75	90.50	....	S.	77	69
12	30.094	30.086	30.212	69	70	58	30.151	63.50	92.00	.78	N.	70	58
13	30.287	30.264	30.330	56	65	56	30.300	58.50	70.50	....	N-E.	65	54
14	30.397	30.340	30.364	52	64	57	30.364	58.25	70.25	....	E.	65	51
15	30.389	30.269	30.284	55	70	63	30.315	63.50	74.25	....	S-E.	71	53
16	30.252	30.176	30.174	64	70	69	30.199	68.50	77.50	....	S-E.	72	63
17	30.176	30.095	30.141	68	73	66	30.139	68.75	83.25	....	S-E.	75	66
18	30.135	30.084	30.124	64	70	66	30.126	66.50	85.75	....	N.	70	63
19	30.130	30.015	30.056	59	65	58	30.071	60.50	83.50	....	N.	66	58
20	30.059	29.973	30.042	59	65	54	30.023	58.25	73.00	....	N-W.	66	54
21	30.075	30.063	30.072	48	63	62	30.062	59.00	75.75	....	S-E.	65	46
22	30.008	29.908	29.908	67	72	73	29.948	70.00	92.25	....	S.	74	62
23	29.978	29.998	30.088	70	74	58	30.038	65.75	43.50	.34	N-W.	75	58
24	30.032	29.820	29.790	47	66	58	29.853	58.00	70.25	.23	S-E.	67	47
25	29.887	29.931	30.058	48	54	41	29.977	46.75	51.75	.16	N.	57	41
26	30.175	30.147	30.210	33	55	47	30.176	45.25	60.00	....	N-E.	55	33
27	30.323	30.242	30.276	45	67	58	30.278	58.00	87.25	....	S-E.	69	42
28	30.159	30.047	30.240	62	69	44	30.158	56.00	84.00	.32	S.	71	44
29	30.349	30.314	30.360	37	53	44	30.338	44.50	60.25	....	N.	54	37
30	30.432	30.382	30.467	37	60	47	30.429	48.50	71.75	....	N-E.	60	37
Means	30.192	30.152	30.170	54.53	67.16	58.50	30.163	60.24	73.85	2.04		68.76	51.73

Highest Barometer—30.467 at 10.16 P. M. of 30th.
Lowest Barometer—29.760 at 9.00 P. M. of 24th.
Highest Temperature—79 deg. on 7th.
Lowest Temperature—32 deg. on 2d.
Monthly range of Temperature—47 deg.
Greatest daily range of Temperature—32 deg.
Mean of Maximum Temperatures—68.76.
Mean of Minimum Temperatures—51.73.
Mean daily range of Temperatures—17.03.
Total Rainfall—2.04 inches.
Prevailing Wind—North.
Total number of miles traveled—5,135.
Maximum velocity of Wind—22 miles per hour,
Number of cloudy days, other than those on which rain fell,—8.
Number of days on which rain or snow fell—7.

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TABLE

Showing Daily and Monthly Mean of Barometer and Thermometer, Monthly Velocity of Wind, and amount of Rainfall, with the prevailing Direction of Wind, for the Month of October, 1874, for the City of Mobile.

October, 1874.	TELEGRAPHIC OBSERVATIONS.						LOCAL OBSERVATIONS.					THERMOMETER	
	BAROMETER.			THERMOMETER.									
	A. M.	P. M.	Midnight.	A. M.	P. M.	Midnight.	Mean daily Barometer.	Mean daily Therm'met'r.	Mean daily Humidity.	Rainfall.	Prevailing direction of Wind.	Maximum.	Minimum.
1	30.074	30.015	30.025	66	80	72	30.034	74.75	62.50	....	N.	82	63
2	30.040	29.979	30.030	69	82	71	30.029	74.25	75.00	....	S.	83	65
3	30.083	30.056	30.102	68	83	72	30.086	74.00	77.75	....	S. W.	83	67
4	30.178	30.119	30.145	66	86	70	30.145	73.00	55.75	....	N.	86	65
5	30.193	30.085	30.088	62	81	69	30 124	70.75	65.50	....	S.	81	62
6	30.101	30.001	30.038	68	81	70	30.049	73.25	70.75	....	S.	83	64
7	30.048	29.989	30.035	71	80	73	30.029	74.75	72.75	....	S.	83	67
8	30.040	29.932	29 995	65	80	69	29.983	71.50	69.75	....	N. E.	80	65
9	29.972	29.907	29.960	61	77	67	29.947	69.25	69.25	....	N. E.	78	60
10	30.009	29.949	30.013	68	78	69	29.996	69.75	69.50	....	S.	79	59
11	30.062	30.060	30.123	65	78	67	30.082	70.50	69.00	....	E.	81	64
12	30.182	30.155	30.274	61	74	59	30.217	63.50	48.00	....	N.	75	59
13	30.339	30.237	30.291	48	66	54	30.292	55.25	51.00	....	N.	66	47
14	30.321	30.212	30.246	45	67	55	30.262	55.50	57.00	....	N.	68	44
15	30.267	30.162	30.169	57	72	66	30.191	66.25	73.00	....	E.	74	50
16	30.132	30.008	30.018	63	73	68	30.047	68.25	88.00	....	S.	78	62
17	30.066	29.974	30.038	58	70	59	30.029	62.25	65.25	....	N.	71	58
18	30.066	29.984	30.027	54	76	61	30.023	63.25	64.50	...	N.	76	53
19	30.076	30.036	30.108	54	76	61	30.074	63.75	57.00	....	N.	76	53
20	30.206	30.196	30.250	54	76	70	30.229	66.50	75.00	....	S.	76	52
21	30.326	30.276	30.315	58	75	71	30.303	69.25	83.75	....	S.	78	57
22	30.321	30.187	30.203	64	76	66	30.231	69.00	78 75	....	S.	79	63
23	30.178	30.063	30.115	63	74	69	30.125	70.00	84.75	....	S.	78	61
24	30.139	30.095	30.153	64	77	68	30.134	70.25	82.00	....	S.	79	63
25	30.238	30.154	30.240	62	78	65	30.221	68.50	74.75	....	N. E.	79	61
26	30.270	30.165	30.208	60	76	64	30.214	67.00	62.75	....	N.	77	59
27	30.228	30.098	30.114	56	78	64	30.150	66.00	59.50	....	N.	74	54
28	30.118	30.056	30.092	56	74	65	30.089	66.75	81.00	....	S.	77	54
29	30.133	30.088	30.115	62	74	68	30.115	69.00	86.50	....	S.	76	60
30	30.199	30.173	30.263	64	68	58	30.227	62.25	40.00	....	N.	69	58
31	30.337	30.239	30.328	48	58	46	30.307	51.25	37.00	....	N.	61	47
Means	30.159	30.085	30.132	60.38	79.90	65.35	30.128	67.40	67.96	....		74.45	58.58

Highest Barometer—30.339 at 6.51 a. m. of 13th.
Lowest Barometer—29.899 at 2.00 p. m. of 9th.
Highest Temperature—86 deg. on the 4th.
Lowest Temperature—44 deg. on the 14th.
Monthly range of Temperature—42 deg.
Greatest daily range of Temperature—25 deg. on the 27th.
Mean of Maximum Temperatures—77.45.
Mean of Minimum Temperatures—58.58.
Mean daily range of Temperatures—18.54.
Total Rainfall—0.
Prevailing Wind—North.
Total number of miles traveled—4,312.
Maximum velocity of Wind—20 miles per hour.
Number of Cloudy Days, other than those on which rain fell—8.
Number of Days on which rain or snow fell—0.

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TABLE

Showing Daily and Monthly Mean of Barometer and Thermometer, Monthly Velocity of Wind, and amount of Rainfall, with the prevailing Direction of Wind, for the Month of September, 1874, for the City of Mobile.

September, 1874.	TELEGRAPHIC OBSERVATIONS.						LOCAL OBSERVATIONS.					THERMOMETER	
	BAROMETER.			THERMOMETER.									
	A. M.	P. M.	Mid-night.	A. M.	P. M.	Mid-night.	Mean daily Barometer.	Mean daily Therm'meter	Mean daily Humidity.	Rainfall.	Prevailing direction of Wind.	Maximum.	Minimum.
1	30.046	29.980	30.046	80	88	82	30.038	82.50	68.25	....	E.	91	77
2	30.049	30.005	30.069	78	85	80	30.050	80.50	70.50	.10	E.	89	76
3	30.052	30.037	30.057	77	79	78	30.057	78.50	83.00	.40	E.	89	75
4	30.051	30.013	30.071	78	84	79	30.057	81.50	73.25	....	E.	89	75
5	30.062	30.033	30.088	77	88	80	30.067	82.25	73.50	.10	S. E.	90	75
6	30.096	30.053	30.121	79	85	80	30.100	80.25	76.75	....	N. E.	90	75
7	30.133	30.099	30.141	80	84	78	30.124	81.75	79.25	.40	E.	90	77
8	30.122	30.084	30.078	78	76	75	30.093	77.25	86.00	.29	N. E.	89	74
9	30.058	29.978	30.014	75	86	77	30.017	78.75	73.75	....	S.	88	73
10	30.008	29.892	29.931	73	90	81	29.950	80.75	67.00	....	N.	91	72
11	29.972	29.918	29.968	76	85	81	29.961	81.25	71.75	....	N. E.	87	73
12	30.012	29.948	30.017	71	87	76	30.001	77.25	66.00	....	E.	87	68
13	30.043	29.986	30.015	71	79	74	30.019	75.50	80.25	.24	N.	90	66
14	30.030	29.948	29.997	75	86	75	29.988	79.00	75.25	....	S.	88	70
15	30.035	29.961	30.004	75	85	76	30.008	78.00	76.00	.05	S.	86	71
16	30 022	29.945	29.983	75	85	77	29.989	79.50	74.25	....	W.	89	71
17	30.005	29.935	30.008	74	85	79	29.989	81.25	74.50	....	S.	88	72
18	30.057	30.000	30.013	77	89	79	30.029	82.75	71.25	....	S.	90	75
19	30.060	30.011	30.047	76	78	77	30.042	77.25	88.00	.25	S. W.	88	72
20	30.078	30.021	30.099	75	85	75	30.079	77.75	62.00	....	N.	82	74
21	30.131	30.049	30.072	67	84	74	30.090	75.00	48.50	....	N.	84	65
22	30.085	30.023	30.070	67	84	77	30.055	76.00	69.25	....	S. E.	87	64
23	30.078	29 991	30.049	75	86	80	30.046	80.00	73.00	....	S. E.	87	72
24	30.062	29.975	30.056	76	88	82	30.042	81.75	69.50	....	S.	88	72
25	30.069	29.998	30.023	78	83	78	30.030	80.25	76.25	.08	S. E.	85	76
26	30.001	29.972	29.958	77	77	76	29.972	76.00	85.50	.63	E.	79	74
27	29.913	29.796	29.860	74	82	73	29.861	75.50	73.00	....	N.	83	70
28	29.876	29.819	29.964	62	78	64	29.895	67.25	50.75	....	N. W.	78	60
29	30.060	30.024	30.063	57	76	62	30.052	65.25	50.00	....	N.	74	57
30	30.143	30.022	30.053	57	78	69	30.076	68.25	64.75	....	S.	79	55
Means	30.046	29.983	30.031	73.66	83.50	76.46	30.025	77.95	75.70	....		86.50	70.86

Highest Barometer—30.145 at 11.16 A. M. of 7th.
Lowest Barometer—29.796 at 3.51 P. M. of 27th.
Highest Temperature—91 deg. on the 10th.
Lowest Temperature—54 deg. on the 29th.
Monthly range of Temperature—37 deg.
Greatest daily range of Temperature—24 deg. on the 30th.
Mean of Maximum Temperatures—86.50.
Mean of Minimum Temperatures—70.86.
Mean daily range of Temperatures—15.63.
Total Rainfall—2.54.
Prevailing Wind—East.
Total number of miles traveled—4,230.
Maximum velocity of Wind—24 miles per hour.
Number of Cloudy Days, other than those on which rain fell—7.
Number of Days on which rain or snow fell—10.

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TABLE

Showing Daily and Monthly Mean of Barometer and Thermometer, Monthly Velocity of Wind, and amount of Rainfall, with the prevailing direction of Wind, for the Month of August, 1874, for the city of Mobile.

August, 1874.	TELEGRAPHIC OBSERVATIONS.						LOCAL OBSERVATIONS.				Thermometer	
	BAROMETER.			THERMOMETER.								
	A. M.	P. M.	Mid-night.	A. M.	P. M.	Mid-night.	Mean daily Barometer.	Mean daily Thermom'ter	Mean daily Humidity.	Rainfall.	Maximum.	Minimum.
1	30.029	29.940	29.945	80	94	82	29.965	84.75	64.00	....	96	76
2	29.979	29.896	29.950	79	96	85	29.945	86.25	66.75	....	96	76
3	29.994	29.985	30.015	81	81	78	29.997	83.00	71.25	.03	95	78
4	30.077	30.022	30.084	79	92	84	30.060	85.25	63.25	....	93	75
5	30.094	30.030	30.043	79	94	82	30.061	85.00	56.75	....	95	75
6	30.056	30.040	30.042	79	89	85	30.037	85.50	69.50	....	94	76
7	30.094	30.049	30.082	82	92	82	30.074	85.75	64.25	....	94	79
8	30.089	30.030	30.051	79	93	83	30.056	85.25	75.50	....	94	77
9	30.092	29.999	30.014	84	97	87	30.038	89.75	62.50	....	99	80
10	30.027	29.972	30.017	84	95	87	30.011	89.25	68.25	.27	97	74
11	30.057	30.024	30.109	85	93	85	30.087	87.50	69.25	....	95	82
12	30.125	30.022	30.071	82	96	84	30.080	86.75	69.00	....	97	79
13	30.058	29.915	29.942	81	99	88	29.966	90.00	59.75	....	100	79
14	29.968	29.893	29.932	81	94	83	29.941	86.00	73.50	....	97	77
15	29.923	29.843	29.907	80	96	89	29.897	87.50	67.00	....	98	79
16	29.940	29.910	29.979	81	88	77	29.976	80.25	79.00	1.81	93	71
17	30.022	30.029	30.135	74	79	76	30.037	77.00	79.50	....	81	72
18	30.076	30.062	30.102	74	76	75	30.092	74.75	87.50	.93	77	72
19	30.127	30.101	30.143	75	84	79	30.166	79.50	83.50	.21	86	73
20	30.129	30.094	30.138	77	85	80	30.129	82.25	84.50	.05	90	75
21	30.130	30.027	30.042	78	88	84	30.067	84.00	77.50	....	92	75
22	30.045	29.990	30.025	82	86	79	30.017	82.25	87.00	....	90	79
23	30.013	29.950	29.983	80	89	80	29.989	83.25	83.00	.19	90	77
24	30.014	30.000	30.029	79	88	78	30.022	81.00	82.75	.30	90	74
25	30.075	30.020	30.044	76	89	81	30.049	81.50	80.75	....	90	74
26	30.092	30.007	30.034	76	92	81	30.053	82.25	78.00	....	92	74
27	30.064	29.990	29.995	78	86	83	30.011	83.00	68.75	....	89	75
28	29.997	29.950	29.963	78	89	83	29.968	83.75	69.00	....	90	75
29	29.992	29.894	29.907	79	91	84	29.933	84.00	66.75	....	93	77
30	29.988	29.845	29.891	80	85	78	29.909	80.25	82.00	....	86	78
31	29.954	29.909	29.883	76	91	81	29.912	82.25	70.25	....	93	74
Means	30.042	29.981	30.016	79.29	89.90	82.03	30.017	83.83	72.91	....	.....	.....

Highest Barometer—30.147 at 11.16 A. M. on the 19th.
Lowest Barometer—29.843 at 3.51 P. M. on the 15th.
Highest Thermometer—100 deg. on the 13th.
Lowest Thermometer—71 deg. on the 16th.
Total Rainfall—3.79 inches.
Prevailing Wind—South.
Total number of miles traveled—4,189.
Maximum velocity of Wind—32 miles per hour at 6.15 P. M. on the 16th.
Number of cloudy days—11.
Number of days on which rain fell—8.

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TABLE

Showing Daily and Monthly Mean of Barometer and Thermometer, Monthly Velocity of Wind, and amount of Rainfall, with the prevailing direction of Wind, for the month of July, 1874, for the city of Mobile.

July, 1874.	TELEGRAPHIC OBSERVATIONS.						LOCAL OBSERVATIONS.				Thermometer	
	BAROMETER.			THERMOMETER.								
	A. M.	P. M.	Mid-night.	A. M.	P. M.	Mid-night.	Mean daily Barometer.	Mean daily Thermom'ter	Mean daily Humidity.	Rainfall.	Maximum.	Minimum.
1	29 989	29.949	29,974	78	79	77	29.970	78.75	85.00	.58	.....	.....
2	29.982	29.916	29.947	75	80	75	29.967	76.75	90.50	.35	.....	.....
3	29.932	29.960	30.018	76	73	74	29,993	74.75	91.25	.22	.....	.....
4	30.050	30.089	30.099	74	74	73	30.063	73.25	95.00	3.68	.....	.....
5	30.133	30.118	30.109	73	83	76	30.117	78.50	87.50	....	.....	.....
6	30.130	29.995	30.020	75	93	83	30.051	84.00	64.75	....	.....	.....
7	30,037	29.977	30.023	77	89	79	30.013	82.25	78.50	.01	.....	.....
8	30,014	29.966	29.987	80	75	72	29.983	79.00	81.25	.80	.....	.....
9	29.982	29.999	30.020	76	78	73	30.001	76.00	84.00	.02	.....	.....
10	30.078	30.052	30,055	74	72	74	30.043	75.25	93.00	3.36	.....	.....
11	30.012	29.975	29.985	72	76	73	29.988	74.25	91.25	.98	.....	.....
12	30.130	30.003	30,073	73	86	77	30.066	79.00	81.50	....	.....	.....
13	30.166	30.148	30.208	77	87	78	30.183	80.25	82.25	.21	.....	.....
14	30.272	30.211	30,287	77	88	74	30.261	78.75	81.50	....	.....	.....
15	30.261	30.154	30.168	74	88	78	30.194	80.25	73.25	....	.....	.....
16	30.154	30.059	30,083	76	90	79	30.105	82.75	70.75	....	.....	.....
17	30.090	29.997	30,043	76	90	82	30.041	83.25	70.25	....	.....	.....
18	30.077	30.027	30,120	78	89	80	30.061	82.25	76.25	....	.....	.....
19	30.156	30.126	30.170	77	90	81	30,143	82.50	75.25	....	.....	.....
20	30.173	30.074	30.130	78	90	80	30.134	82.00	75.50	....	.....	.....
21	30,127	30.034	30.103	77	92	79	30.104	81.75	70.25	....	.....	.....
22	30.127	30.084	30.097	80	91	81	30.109	84.25	68.75	....	.....	.....
23	30,141	30,044	30.065	79	92	82	30.089	84.00	75.75	....	.....	.....
24	30.088	30.020	30.013	81	89	81	30,037	82.75	77.25	....	.....	.....
25	30,044	29.990	30.030	80	87	83	30,027	84,75	71.00	....	.....	.....
26	30,069	29.980	30.015	81	95	84	30.031	86,25	67.25	....	.....	.....
27	30.006	29.901	29.915	80	92	84	29.940	85.00	71.50	....	.....	.....
28	29.886	29.839	29.910	80	88	82	29,886	83.50	76.00	....	.....	.....
29	29.954	29.935	30.023	78	92	80	29.975	83.25	61.25	....	.....	.....
30	30.062	30.037	30.070	76	93	80	30.056	82.25	71.75	....	.....	.....
31	30.102	30.025	30.038	77	94	80	30.056	83.00	69.00	....	.....	.....
Means	30.078	30.022	30.058	76.93	86.29	78.51	30.054	80.79	77.68	....	.....	.....

Highest Barometer—30.287 at 10.16 A. M. on the 14th.
Lowest Barometer—29.839 at 3.51 P. M. on the 28th.
Highest Thermometer—96 deg. on the 6th.
Lowest Thermometer—69 deg. on the 11th.
Total Rainfall—10.21 inches.
Prevailing Wind—South-west.
Total number of miles traveled—4,189.
Maximum velocity of Wind—25 miles on the 8th.
Number of cloudy days—16.
Number of days on which rain fell—10.

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TABLE

Showing Daily and Monthly Mean of Barometer and Thermometer, Monthly Velocity of Wind, and amount of Rainfall, with the prevailing direction of Wind, for the Month of June, 1874, for the city of Mobile,

June, 1874.	TELEGRAPHIC OBSERVATIONS.						LOCAL OBSERVATIONS.				Thermometer	
	BAROMETER.			THERMOMETER.								
	A. M.	P. M.	Mid-night.	A. M.	P. M.	Mid-night.	Mean daily Barometer.	Mean daily Thermometer	Mean daily Humidity.	Rainfall.	Maximum.	Minimum.
1	29.910	29.814	29.855	74	88	82	29.870	81.75	73.00	....	91	70
2	29.992	29.863	29.965	79	85	80	29.944	83.00	71.75	....	90	77
3	30.007	29.943	30.014	78	88	76	30.012	79.75	74.25	....	89	75
4	30.028	29.929	29.978	75	91	78	29.988	80.25	67.00	....	92	71
5	29.990	29.869	29.928	75	89	79	29.929	82.50	67.00	....	89	74
6	29.930	29.891	29.934	74	83	72	29.918	76.00	85.25	.64	88	70
7	30.015	29.965	30.028	76	84	80	30.008	82.25	71.00	.01	90	71
8	30.027	29.987	30.023	80	91	79	30.015	82.75	71.25	....	92	76
9	30.074	29.987	30.023	79	92	79	30.033	82.75	70.50	....	93	75
10	30.029	29.982	30.007	80	92	81	30.008	84.75	67.25	....	93	76
11	30.052	29.987	30.048	81	91	81	30.036	84.75	65.25	....	93	77
12	30.072	30.003	30.083	80	82	75	30.057	79.50	72.00	....	90	75
13	30.086	30.049	30.109	77	80	76	30.079	78.75	73.75	....	89	72
14	30.103	30.054	30.106	76	78	76	30.102	77.75	82.75	....	89	74
15	30.116	30.058	30.086	77	85	76	30.100	78.50	79.75	.48	87	74
16	30.064	30.041	30.093	76	83	77	30.076	79.25	82.25	.43	85	72
17	30.107	30.086	30.119	79	77	76	30.098	77.75	83.00	.16	86	75
18	30.111	30.086	30.131	73	79	75	30.100	76.25	83.00	....	87	72
19	30.139	30.071	30.072	76	82	74	30.102	77.25	81.50	....	86	72
20	30.090	30.060	30.061	74	75	74	30.060	77.75	83.25	.38	87	72
21	30.047	29.996	30.022	72	83	73	30.125	76.25	80.75	.19	85	70
22	30.028	30.042	30.124	75	78	76	30.062	76.50	87.00	.45	79	72
23	30.048	30.122	30.136	74	83	77	30.147	78.75	84.50	.15	86	73
24	30.187	30.134	30.185	77	91	79	30.171	81.75	79.50	....	91	72
25	30.196	30.119	30.142	79	89	80	30.155	82.50	83.50	....	90	75
26	30.133	30.023	30.025	80	85	80	30.067	82.25	87.75	....	88	77
27	30.047	30.006	29.944	80	72	73	29.953	78.00	91.50	1.24	91	71
28	29.985	29.892	29.957	76	91	75	29.946	78.50	83.75	1.56	91	71
29	29.982	29.925	29.975	77	86	80	29.969	81.75	74.00	....	89	72
30	30.014	29.945	29.987	80	95	82	29.986	85.00	78.75	....	96	77
Means	30.053	29.997	30.038	76.96	84.93	77.36	30.037	80.15	78.52	....	.....	.....

Highest Barometer—30.198.
Lowest Barometer—29.814.
Highest Thermometer—96 deg.
Lowest Thermometer—70 deg.
Total Rainfall—5.69 inches.
Prevailing Wind—South.
Total number of miles traveled—4,309.
Maximum velocity of Wind—30 miles per hour.
Number of cloudy days—20.
Number of days on which rain fell—12.

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TABLE

Showing Daily and Monthly Mean of Barometer and Thermometer, Monthly Velocity of Wind, and amount of Rainfall, with the prevailing Direction of Wind, for the Month of April, 1874, for the City of Mobile.

April, 1874.	TELEGRAPHIC OBSERVATIONS.						LOCAL OBSERVATIONS.				THERMOMETER.	
	BAROMETER.			THERMOMETER.								
	A. M.	P. M.	Mid-night.	A. M.	P. M.	Mid-night.	Mean daily Barometer.	Mean daily Therm'meter	Mean daily Humidity.	Rainfall.	Maximum.	Minimum.
1	30.002	30.038	30.133	64	62	56	30.073	60.75	87.50	1.57	65	56
2	30.218	30.146	30.257	49	63	52	30.220	54.75	57.25	....	63	48
3	30.298	30.160	30.181	47	69	55	30.219	57.25	52.50	....	69	45
4	30.161	30.064	30.066	53	70	58	30.098	60.00	63.00	....	70	50
5	29.998	29.989	30.030	61	69	65	30.007	65.00	88.50	.30	70	56
6	30.050	30.026	30.046	66	74	71	30.049	71.50	87.50	....	77	65
7	29.991	29.995	29.957	69	64	64	29.979	65.25	91.00	.57	75	62
8	29.805	29.666	29.586	68	74	70	29.683	71.00	91.25	.50	76	64
9	29.665	29.762	29.968	67	64	53	29.818	60.50	60.00	.48	70	53
10	30.146	30.138	30.267	44	63	52	30.202	53.25	51.75	....	64	42
11	30.325	30.232	30.258	47	69	56	30.279	57.00	60.75	....	69	44
12	30.255	30.175	30.193	51	68	61	30.207	61.50	63.75	....	73	48
13	30.234	30.191	30.174	66	72	67	30.206	68.75	75.00	....	73	59
14	30.164	30.129	30.115	69	75	70	30.139	71.75	81.50	....	77	67
15	30.022	29.950	29.963	69	77	71	29.971	72.25	80.50	....	77	67
16	29.972	29.811	29.755	63	66	63	29.922	62.75	93.25	1.61	71	60
17	29.980	30.017	30.097	62	66	65	30.040	65.50	91.50	.54	70	60
18	30.057	30.050	30.067	66	65	64	30.076	65.00	93.00	1.51	67	64
19	29.980	29.911	29.948	68	71	71	29.950	70.50	93.75	.20	73	64
20	30.065	30.036	30.108	64	76	66	30.081	68.50	68.75	.07	78	62
21	30.176	30.078	30.068	60	74	68	30 106	69.75	77.25	....	81	59
22	29 971	29.878	29.868	71	78	72	29.914	73.50	88.25	....	79	67
23	29.867	29.823	29.949	65	83	65	29.905	70.00	75.75	1.56	83	65
24	29.897	29.732	29.735	58	59	57	29.784	56.75	93.25	1.71	65	54
25	29.940	30.008	30.128	52	68	58	30.048	58.75	58.00	....	68	51
26	30.197	30.148	30.204	58	75	66	30.194	67.25	74.50	....	77	53
27	30.219	30.145	30.096	64	76	67	30.156	70.00	80.25	....	78	62
28	30.011	29.948	30.132	69	75	56	30.037	66.00	58.00	.30	75	56
29	30.244	30.250	30.310	50	66	56	30.273	56.25	54.50	....	66	48
30	30.352	30.224	30.183	50	71	59	30.256	59.75	62.75	....	71	45
Means	30.075	30.024	30.061	60.33	70.06	62.46	30.063	64.35	75.15	....		

Highest Barometer—30.352 at 6.51 A. M. of 30th.
Lowest Barometer—29.576 at 12.30 A. M. of 9th.
Highest Thermometer—83 deg. on the 23d.
Lowest Thermometer—42 deg. on the 10th.
Total Rainfall—10.92 inches.
Prevailing Wind—South.
Total number of miles traveled—5,266.
Maximum velocity of Wind—28 miles per hour on 10th.
Number of Cloudy Days—18.
Number of Rainy Days—15.

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TABLE

Showing Daily and Monthly Mean of Barometer and Thermometer, Monthly Velocity of Wind, and amount of Rainfall, with the prevailing Direction of Wind, for the Month of May, 1874, for the City of Mobile.

May, 1874.	TELEGRAPHIC OBSERVATIONS.						LOCAL OBSERVATIONS.				THERMOMETER.	
	BAROMETER.			THERMOMETER.			Mean daily Barometer.	Mean daily Therm'met'r.	Mean daily Humidity.	Rainfall.	Maximum.	Minimum.
	A. M.	P. M.	Mid-night.	A. M.	P. M.	Mid-night.						
1	30.099	29.974	29.932	59	73	66	30.003	65.75	73.75	....	73	54
2	29.854	29.795	29.812	68	75	69	29.822	70 50	79.50	....	77	65
3	29.866	29.804	29.824	70	80	72	29.839	73.75	87.00	.31	80	69
4	29.818	29.822	29 899	68	71	62	29.856	66.50	55.00	....	74	63
5	29.935	29.905	30.005	60	62	55	29.962	59.25	59.25	....	66	55
6	30.060	30.047	30.104	52	68	59	30.077	60.50	67.50	....	70	50
7	30.168	30.157	30.221	58	78	65	30.188	67.75	54.75	....	78	54
8	30.286	30.252	30.262	62	78	66	30.273	70.50	61.00	....	79	56
9	30.242	30.189	30.186	65	78	68	30.007	70.25	75.25	....	79	60
10	30.162	30.099	30.129	64	77	68	30.135	70.25	73.25	....	79	61
11	30.130	30.057	30.078	64	85	70	30.085	74.00	72.25	....	85	61
12	30.110	30.021	30.072	66	86	74	30.064	75.25	53.00	....	86	63
13	30.047	30.003	30.016	65	74	68	30.023	70.00	75.00	....	75	65
14	30.007	29.934	29.982	69	83	73	29.978	74.25	71.25	....	84	66
15	29.990	29.916	29.969	72	80	78	29.968	77.75	64.75	....	84	69
16	29.983	29.913	30.002	72	83	75	29.984	77.50	59.75	...	86	70
17	30.072	29.986	30.020	66	85	74	30.030	73.75	56.00	....	85	64
18	30.038	29.926	30.013	68	84	67	30.005	71 75	67.25	.22	84	64
19	30.092	30.017	30.060	63	78	72	30.065	70.00	46.75	....	79	62
20	30.072	29.981	30.012	66	82	75	30.027	73.25	80.75	....	82	60
21	30.020	29.910	30.015	73	77	71	29.985	74.75	73.50	.35	86	71
22	30.053	30.031	30.057	70	86	75	30.047	77.50	50.25	....	88	68
23	30.076	30.008	30.052	69	85	78	30.047	79.50	55 50	....	90	66
24	30.092	29.998	30.044	75	83	79	30.038	81.00	70.50	....	88	72
25	30.062	29.985	30.010	76	85	73	30.020	77.00	73.00	.26	88	68
26	30.050	29.991	30.014	73	84	76	30.018	80.25	67.75	....	88	69
27	30.048	30.005	30.021	74	88	79	30.024	79.25	69.00	....	88	70
28	30.048	30.005	30.068	75	89	79	30.047	80.75	67.25	....	90	70
29	30.122	30.089	30.102	77	90	81	30.088	82.25	66.75	....	91	71
30	30.147	30.040	30.062	78	89	78	30.089	82 00	65.00	....	90	77
31	30.050	29.885	29.920	74	87	73	29.957	76.50	76.00	.09	88	70
Means	30.058	29.991	30.031	68.09	80.74	71.54	30.030	73.65	66.69	....		

Highest Barometer—30.303 at 11.16 A. M. of 8th.
Lowest Barometer—29.795 at 3.51 P. M. of 2d.
Highest Thermometer—91 deg. on the 29th.
Lowest Thermometer—50 deg. on the 6th.
Total Rainfall—1.23 inches.
Prevailing Wind—South.
Total number of miles traveled—4,729.
Maximum velocity of Wind—34 miles, on 18th at 4.25 P. M.
Number of Cloudy Days—10.
Number of Rainy Days—5.

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TABLE

Showing Daily and Monthly Mean of Barometer and Thermometer, Monthly Velocity of Wind, and amount of Rainfall, with the prevailing Direction of Wind, for the Month of March, 1874, for the City of Mobile.

March, 1874.	TELEGRAPHIC OBSERVATIONS.						LOCAL OBSERVATIONS.				THERMOMETER.	
	BAROMETER.			THERMOMETER.								
	A. M.	P. M.	Mid-night.	A. M.	P. M.	Mid-night.	Mean daily Barometer.	Mean daily Therm'met'r.	Mean daily Humidity.	Rainfall.	Maximum.	Minimum.
1	30.065	29.984	30.096	65	69	59	30.050	65.50	81.50	.01	73	63
2	30.160	30.054	30.116	51	68	55	30.129	57.25	71.25	....	68	50
3	30.052	29.943	29.921	48	66	64	29.974	60.50	86.50	...	67	46
4	29.904	29.871	29.935	68	74	64	29.904	66.75	89.50	....	76	63
5	29.977	29.943	29.962	64	74	66	29.957	68.50	88.25	....	76	63
6	29.915	29.866	29.888	65	72	68	29.896	69.00	87.50	.03	75	63
7	30.013	30.096	30.213	61	69	55	30.123	61.50	34.75	.97	69	55
8	30.256	30.214	30.275	53	65	53	30.255	56.75	36.50	....	65	51
9	30.269	30.167	30.194	45	69	55	30.207	56.25	56.25	....	69	44
10	30.151	29.974	29.935	52	68	62	30.011	61.00	85.75	....	68	49
11	29.853	29.933	30.028	65	58	55	29.955	58.50	76.00	.04	69	54
12	30.082	30.039	30.102	46	63	51	30.076	54.50	50.50	....	64	46
13	30.174	30.161	30.209	44	65	54	30.189	55.50	52.00	....	65	43
14	30.223	30.195	30.168	50	54	52	30.184	52.75	62.25	.03	57	43
15	30.075	29.933	29.978	56	66	63	29.997	62.00	95.75	2.91	66	43
16	29.968	29.812	29.973	65	66	63	29.933	62.25	95.50	2.93	70	62
17	30.023	30.026	30.075	66	69	67	30.048	68.25	94.50	.05	71	63
18	30.107	30.046	30.041	67	73	68	30.076	69.50	87.50	....	76	66
19	30.025	29.996	30.008	68	75	69	30.014	70.00	91.25	....	75	66
20	30.021	29.963	30.046	68	75	69	30.026	71.00	87.50	....	76	67
21	30.081	30.048	30.083	68	75	70	30.079	71 50	90.00	....	76	67
22	30.088	30.025	30.122	69	77	69	30.091	73.25	79.50	....	82	68
23	30.120	30.140	30.214	63	54	50	30.161	56.75	75.50	.39	69	49
24	30.318	30.285	30.327	50	63	53	30.331	55.00	57.25	.23	63	48
25	30.310	30.150	30.148	49	68	61	30.201	59.50	71.75	.01	68	48
26	30.089	30.092	30.139	60	69	63	30.117	63.75	87.75	.44	69	57
27	30.176	30.110	30.134	60	73	66	30.143	67.00	84.25	....	73	59
28	30.155	30.130	30.158	67	70	67	30.166	68.50	93.00	.63	75	64
29	30.125	30.168	30.158	65	60	60	30.150	60.75	95.50	1.56	73	57
30	30.154	30.038	30.029	59	74	67	30.071	67.25	86 50	....	75	58
31	29.952	29.923	29.987	67	77	66	29.957	69.50	86.50	.34	78	66
Means	30.094	30.042	30.085	59.48	68.32	61.41	30.079	63.32	78.00	....		

Highest Barometer—30.354 at 9.00 P. M. of 24th.
Lowest Barometer—29.812 at 3.51 P. M. of 16th.
Highest Thermometer—82 deg. on the 22d.
Lowest Thermometer—43 deg. on the 13th, 14th, and 15th.
Total Rainfall—10.57 inches.
Prevailing Wind—South.
Total number of miles traveled—5,165.
Maximum velocity of Wind—24 miles, on 15th at 1.00 A. M.
Number of Cloudy Days—21.
Number of Rainy Days—15.

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TABLE

Showing Daily and Monthly Mean of Barometer and Thermometer, Monthly Velocity of Wind, and amount of Rainfall, with the prevailing Direction of Wind, for the Month of February, 1874, for the City of Mobile.

February, 1874.	TELEGRAPHIC OBSERVATIONS.						LOCAL OBSERVATIONS.				THERMOMETER.	
	BAROMETER.			THERMOMETER.								
	A. M.	P. M.	Mid-night.	A. M.	P. M.	Mid-night.	Mean daily Barometer.	Mean daily Therm'meter	Mean daily Humidity.	Rainfall.	Maximum.	Minimum.
1	30.148	30.122	30.156	61	67	58	30.150	61.50	92.25	.20	68	58
2	30.118	29.987	30.023	58	61	56	30.039	58.00	92.50	1.07	62	56
3	30.121	30.158	30.281	51	54	49	30.202	51.00	82.75	....	55	48
4	30.367	30.314	30.367	40	60	48	30.351	47.75	64.25	....	60	40
5	30.343	30.187	30.072	43	61	59	30.189	55.25	72.50	....	62	41
6	29.978	29.978	30.082	59	60	52	30.015	57.25	85.25	.69	62	52
7	30.112	30.090	30.146	47	50	48	30.123	48.50	71.00	....	52	46
8	30.131	30.080	30.204	42	55	48	30.154	48.75	74.50	....	57	42
9	30.257	30.246	30.369	42	60	49	30.298	51.50	54.00	....	60	41
10	30.397	30.294	30.273	36	55	42	30.322	45.00	50.75	....	56	36
11	30.199	30.075	30.026	39	59	55	30.102	52.25	78.50	....	60	37
12	30.021	29.956	29.913	54	63	60	29.977	29.50	80.75	....	66	53
13	29.916	29.911	30.005	61	63	66	29.954	62.00	91.00	.19	66	60
14	30.044	30.014	30.051	61	72	61	30.040	63.00	88.25	.09	72	60
15	30.013	29.913	29.937	57	65	63	29.962	62.25	93.75	.10	66	56
16	29.943	29.891	29.925	61	71	61	29.921	63.75	83.50	....	71	60
17	29.900	29.803	29.875	62	72	63	29.888	65.50	82.50	.02	72	60
18	30.002	29.981	30.072	48	62	54	30.050	55.00	70.25	....	62	47
19	30.100	30.063	30.082	43	66	62	30.077	58.25	86.25	....	68	43
20	30.079	30.018	30 025	69	63	64	30.044	64.25	94.00	01	69	59
21	30.035	30.028	30.072	65	73	67	30.052	69.00	89.50	....	75	64
22	30.072	30.053	30.096	66	74	67	30.078	69.25	85.50	....	75	65
23	30.237	30.265	30.311	55	53	46	30.276	50.25	59.50	.11	67	46
24	30.293	30.156	30.135	45	51	48	30.181	48.50	68.25	....	51	44
25	30.167	30.244	30.362	46	53	45	30.280	47.25	72.25	.24	53	45
26	30.377	30.316	30.342	39	60	54	30.352	52.00	56.25	....	60	38
27	30.387	30.294	30.310	47	71	58	30.339	59.00	68.00	....	71	47
28	30.244	30.131	30.113	52	69	61	30.163	62.50	77.50	....	72	50
Means	30.142	30.091	30.129	51.82	62.25	55.85	30.127	56.71	77.33	....		

Highest Barometer—30.400 at 11.16 A. M. of 4th.
Lowest Barometer—29.803 at 3.51 P. M. of 17th.
Highest Thermometer—75 deg. on the 21st and 22d.
Lowest Thermometer—36 deg. on the 10th.
Total Rainfall—2.72 inches.
Prevailing Wind—South.
Total number of miles traveled—4,057.
Maximum velocity of Wind—20 miles per hour.
Number of Cloudy Days—17.
Number of Rainy Days—9.

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TABLE

Showing Daily and Monthly Mean of Barometer and Thermometer, Monthly Velocity of Wind, and amount of Rainfall, with the prevailing direction of Wind, for the month of January, 1874, for the city of Mobile.

January, 1874.	TELEGRAPHIC OBSERVATIONS.						LOCAL OBSERVATIONS.				Thermometer	
	BAROMETER.			THERMOMETER.			Mean daily Barometer.	Mean daily Thermometer	Mean daily Humidity.	Rainfall.	Maximum.	Minimum.
	A. M.	P. M.	Mid-night.	A. M.	P. M.	Mid-night.						
1	30.326	30.256	30.290	48	61	56	30.292	55.75	77.75	....	63	47
2	30.286	30.227	30.245	53	65	57	30.254	58.25	80.75	....	66	52
3	30.178	30.091	30.084	51	65	60	30.115	60.00	84.50	....	67	50
4	30.068	30.075	30.120	58	67	62	30.086	62.25	89.00	.22	71	57
5	30.148	30.062	30.060	48	51	45	30.085	48.00	88.75	.02	62	45
6	29.961	29.932	30.047	43	40	38	29.975	40.00	83.75	.66	45	37
7	30.143	30.116	30.185	33	49	40	30.155	41.00	46.75	....	49	33
8	30.191	30.121	30.078	32	50	47	30.120	44.00	73.25	....	50	32
9	29 986	29.919	29.994	50	65	51	29.968	56.00	81.75	.02	65	45
10	30.052	30.021	30.054	42	60	55	30.045	53.25	81.25	....	61	41
11	30.112	30.090	30.156	48	66	58	30.123	58.50	86.50	....	66	47
12	30.151	30.112	30.156	56	66	61	30.135	61.25	87.00	....	67	55
13	30.112	30.035	30.076	57	65	62	30.071	62.50	85.75	.10	67	57
14	30.222	30.210	30.282	44	49	39	30.249	43.00	72.50	.01	62	39
15	30.325	30.217	30.263	32	43	39	30.261	39.25	46.50	....	43	31
16	30.216	30.162	30.207	33	41	39	30.203	57.75	56.50	.03	42	32
17	30.206	30.150	30.242	39	55	50	30.203	48.50	66.50	....	55	38
18	30.271	30.192	30.228	46	53	51	30.239	50.75	78.50	....	53	45
19	30.218	30.150	30.211	51	65	60	30.198	58.50	85.00	....	66	48
20	30.203	30.155	30.228	56	65	58	30.203	59.75	85.25	....	67	55
21	30.191	30.175	30.161	57	64	61	30.182	61.25	86.75	....	65	57
22	30.076	30.000	30.065	61	65	63	30.060	63.50	91.50	.31	67	59
23	30.265	30.288	30.390	57	64	55	30.324	58.75	61.00	.37	66	55
24	30.568	30.571	30.682	51	57	48	30.624	52.00	30.75	....	60	48
25	30.733	30.604	30.643	37	56	46	30.657	46.50	34.00	....	56	36
26	30.637	30.469	30.417	44	58	52	30.500	51.50	64.25	....	58	43
27	30.261	30.109	30.103	55	60	64	30.151	61.50	86.75	.74	65	50
28	30.243	30.276	30.383	57	65	54	30.308	57.75	52.75	....	65	53
29	30.462	30.354	30.381	43	60	49	30.398	50.75	56.25	....	60	42
30	30.357	30.258	30.291	39	62	51	30.300	52.00	78.50	....	63	38
31	30.222	30.125	30.150	46	66	60	30.162	58.25	81.75	....	67	44
Means	30.238	30.178	30.221	47.32	58.64	52.61	30.214	53.29	72.95	....	.....	.....

Highest Barometer—30.747 at 10.00 A. M. on the 25th.
Lowest Barometer—29.888 at 2.00 P. M. on the 6th.
Highest Thermometer—71 deg. on the 4th.
Lowest Thermometer—31 deg. on the 15th.
Total Rainfall—2.48 inches.
Prevailing Wind—South.
Total number of miles traveled—4,430.
Maximum velocity of Wind—22 miles on the 24th.
Number of cloudy days—19.
Number of days on which rain fell—8.

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CONDENSED STATEMENT OF THE METEOROLOGY OF THE CITY OF MOBILE FOR THE YEAR 1874.

DATE	BAROMETER.							THERMOMETER.							WIND.							AM'T RAIN AND MELTED SNOW.	
	MEAN.	MEAN OF			RANGE.			MEAN.	MEAN OF			RANGE.			PREV. DIRECTION.	NUMBER OF MILES.					TOTAL.	AM'T IN INCHES.	NO. OF DAYS ON WHICH RAIN OR SNOW FELL.
		A. M. observation.	P. M. observation.	Night observation.	Highest.	Lowest.	Difference.		A. M. observation.	P. M. observation.	Night observation.	Maximum.	Minimum.	Difference.		Noon to 6 P. M.	6 P.M. to midnight.	Midnight to 6 A.M.	6 A. M. to noon.	Max. velocity d'ring month			
Jan...	30.214	30.238	30.178	30.221	30.747	29.888	.859	53.29	47.22	58.64	52.61	71	31	40	s.	15.71	9.55	7.48	11.56	22	44.30	2.48	8
Feb ..	30.127	30.142	30.091	30.129	30.400	29.803	.597	56.71	51.82	62.25	55.85	75	36	39	s.	12.63	9.27	8.66	10.01	20	40.57	2.72	9
Mar..	30.079	30.094	30.042	30.085	30.354	29.812	.542	63.32	59.48	68.32	61.41	82	43	39	s.	18.57	11.44	9.49	12.15	24	51.65	10.57	15
April..	30.063	30.075	30.024	30.061	30.352	29.576	.776	64.35	60.33	70.06	62.46	83	42	41	s.	17.56	12.19	10.18	12.73	28	52.66	10.92	15
May..	30.030	30.058	29.991	30.031	30.303	29.795	.508	73.65	68.09	80.74	71.54	91	50	41	s.	18.97	9.77	7.31	11.24	34	47.29	1.23	5
June..	30.037	30.053	29.997	30.038	30.198	29.814	.384	80.15	76.96	84.93	77.36	96	70	26	s.	16.27	8.75	7.20	10.87	20	43.09	5.69	12
July..	30.054	30.078	30.022	30.058	30.287	29.839	.448	80.79	76.93	86.29	78.51	96	69	27	sw.	15.95	8.12	7.38	10.44	25	41.89	10.21	10
Aug ..	30.017	30.042	29.981	30.016	30.147	29.843	.304	83.83	79.29	89.90	82.03	100	71	29	s.	16.70	9.87	7.51	10.49	32	44.57	3.79	8
Sept..	30.025	30.046	29.983	30.031	30.145	29.796	.349	77.95	73.66	83.50	76.46	91	54	37	E.	13.14	8.96	8.92	11.28	24	42.30	2.54	10
Oct . .	30.128	30.159	30.085	30.132	30.339	29.899	.440	67.40	60.38	79.90	65.35	86	44	42	N.	13.86	8.46	9.07	11.73	20	43.12	.....	.....
Nov...	30.163	30.192	30.152	30.170	30.467	29.760	.707	60.24	54.53	67.16	58.50	79	32	47	N.	14.35	11.65	12.15	13.20	22	51.35	2.04	7
Dec ..	30.216	30.239	30.185	30.220	30.513	29.838	.675	54.30	49.22	59.25	53.35	71	34	37	N.	13.55	10.31	10.33	11.86	24	46.05	4.17	14
An. Me	30.096	30.118	30.060	30.099	30.354	29.805	.549	67.99	63.16	72.24	66.28	85.00	48.00	37.00	s.	1560.50	986.16	880.66	1146.33	24.58	4573.66	56.36	9.41

GENERAL REMARKS.

January—Changeable temperature, variable Barometer, snow and sleet on the 6th.
February—Remarkable for sudden atmospheric changes, and general mildness of temperature.
March—Sudden barometrical changes, heavy rain-storms on 15th, 16th, 29th, and afternoon of 31st with thunder and lightning and high winds.
April—Sudden barometrical changes, heavy rain-storms on 8th, 16th, 18th, 23d, and 24th; sudden changes of temperature and high winds.
May—Local thounder-storms, severe lightning; hail shower on 27th.
June—Local thunder-storms; no other phenomena.
July—Heavy rain-storms on 4th and 10th; rain every day till 13th; no rains during the remainder of the month.
August—Steady barometer; high temperature; 9 deaths caused by the excessive heat, all occurring from 12th to 15th.
September—Comparatively dry; barometer and Thermometer steady; no atmospheric disturbance.
October—No rain during the month; no phenomena; first frost on the 14th.
November—Comparatively dry during the month; no remarkable phenomena; frost on 1st, 2d, 3d, 26th, and 30th,
December—Variable weather; frost on the 8th, 9th, 10th, 21st, aud 23d.

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NOTES AND REFLECTIONS.

NOTE A.—DIPHTHERIA.

Diphtheria seems to be on the increase generally throughout the United States. I hear much more frequently than I did a few years ago, of its prevalence in our Southern villages and country neighborhoods, and the mortuary tables of our principal cities, make it responsible for an annually increasing number of deaths. In Mobile, we have had more or less of it almost every year since the war, but never enough to make it properly epidemic. Here, also, the number of cases seems to be increasing. These considerations suggested to me the propriety of ascertaining, if possible, the number of cases which had occurred in the city during the year, together with the percentage of mortality, and its prevalence in relation to sexes, colors, ages, and localities. With the hope of eliciting the desired information, I made application by means of a circular note to the physicians of the city; but several of these failing to make any reply, the data which I have accumulated are too incomplete to warrant their publication. It may be stated, however, with tolerable confidence, that the disease was considerably more prevalent in the western portion of the city than in any other quarter; that the number of cases was somewhat greater among the whites than among the blacks, though not greater in proportion to the relative numbers of the two races in the population of the city; that the mortality was somewhere between fifteen and twenty per centum of the well-marked cases; and that a decided majority of all the cases for the year occurred in the months of October, November, and December.

Eighteen deaths from diphtheria are reported for the year; and nine from croup. It is contended by many physicians that croup is only a form of diphtheria. However this may

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be, I am satisfied that several of the cases of death ascribed in our mortuary reports to croup, were really occasioned by unmistakable diphtheria. In one family, for example, a little boy died, and his death was certified as resulting from pseudo-membranous croup; and just one week afterwards, the same family lost a little girl, whose death was certified as due to diphtheria. Nobody doubts that there was a diagnostic mistake made in the first case; and the same sort of mistake was doubtless made in other instances. The extreme rarity of membranous croup, not diphtheritic, in Mobile, and, indeed, throughout the South, is additional warrant for this suspicion. I add separate summaries, however, for the two diseases, the deaths ascribed to diphtheria being placed above the division line in the subjoined table, and those ascribed to croup, below it:

DEATHS IN MOBILE FROM DIPHTHERIA AND CROUP IN 1874.

Number.....	WHITES, WITH AGES.				Number.....	BLACKS, WITH AGES.			
	MALE.	No....	FEMALE.			MALE.	No....	FEMALE.	
1	3 years.	5	6 years.		13	4 years.	17	25 years.	
2	1 year.	6	11 "		14	4 "	18	40 "	
3	4½ years.	7	3 "		15	6 "			
4	4½ "	8	1 year.		16	16 "			
		9	5 years.						
		10	6 "						
		11	7 "						
		12	2 "						
19	1 year.	21	3 years.		23	24 years.	26	6 years.	
20	2½ years.	22	4 "		24	1½ "	27	2 months.	
					25	3 "			

ADDENDUM TO NOTE A.

Remarks on Diphtheria by Dr. Gaines.—While this paper

was under consideration in the Association, Dr. E. P. Gaines, of Mobile, was requested to make some remarks on diphtheria, which he did. He was subsequently requested to write out his remarks for publication. As the most appropriate place for them, they are here subjoined:

Dr. Gaines said: It is well understood that diphtheria usually makes its appearance on the mucous membranes about the throat. On reference to the literature of the subject, it is also seen that it sometimes makes its appearance on other surfaces. Dr. Jacobi, in an elaborate and able article on diphtheria, in the American Journal of Obstetrics for February, 1875, says: "Pseudo-membranes are found in the pharynx, on the tonsils, uvula, and velum, on the gums, lips, and tongue, on the mucous membranes of the mouth and nose, in the larynx, trachea, and bronchi, in the superior part of the œsophagus, in the lower part of the intestinal canal, around the anus, in the vagina, the external ear, the naso-lachrimal duct, on the conjunctiva, and on the cutis where it has been deprived of its surface, as in sore nipples, etc. In all these places, the chemical, as well as the microscopical, constitution of the membranous exudation is entirely the same."

In the every-day practice of the profession, we look for the *ordinary* phenomena of disease; but it is in order to show how much more common than is generally supposed are the more eccentric manifestations of this disease, that I will relate a few cases that have happened in my own practice during the last few years.

When diptheria first made its appearance in Mobile, and before I was aware that the atmosphere was poisoned with it, I was called to prescribe for a babe, at whose birth I had been present five days before. The child had what seemed to be a cold in the head, coryza. I regarded the case as very simple, and told the mother to treat it on the plan of Dr. Meigs, to wit, with a flannel cap to the head. I also touched the nostrils with a little glycerine. I bade the mother be of good cheer, because her babe would soon be well. It did not

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improve, however, and after a few days, the mother observed that it could hardly swallow. I looked into the throat, and was shocked to find the whole throat covered with this pseudo-membranous, or diphtheritic deposit. The babe grew rapidly worse, and died the next day. I have seen two cases since, in which the chief deposition was on the mucous membrane of the nose. One was a case of my own, which recovered, because, knowing that the disease was in the atmosphere, I was on the lookout for it. The other was a case where I was called in consultation by Dr. Sherrard, who had recognized the disease, looking out for it, he said, because he had heard the relation of my first and fatal case in the Mobile Medical Society. Although this case was promptly treated, adynamic symptoms set in, together with that irritability of the stomach which characterizes so many of our fatal cases in Mobile, and the child, thus unable to retain medicine or food, slowly sunk into the arms of death.

A little boy, some ten years of age, while spending the summer on the sea-coast, got a splinter in his foot, and, although his parents supposed that they had extracted it, the child did not get well, and they brought him to town, and stopped at the house of a brother-in-law. I gave chloroform, opened the wound, and made a thorough search for the splinter, but could find none. I then applied poultices to the foot, to which I added Darby's prophylactic. Still the wound did not improve—it never put on a healthy appearance. I called in Dr. Gilmore, and mentioned to him that the wound looked as if it was covered with diphtheritic exudation. He suggested that we should look into the mouth, and there, also, we saw the same kind of exudation. For reasons not necessary to mention, I withdrew from the case. The child continued to grow worse, and at length died suddenly of what Dr. Gilmore called diphtheritic paralysis of the heart. One of the children of the brother-in-law was then taken ill, and died in a few days of an affection of the throat, which certainly must have been diphtheria, because the brother of the boy that had the splinter in the foot had an attack imme-

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diately afterwards, which was called, by three of our best physicians, who saw it in consultation, a well-marked case of diphtheria. This child recovered.

I saw two cases of intertrigo in which the raw surfaces were covered with this exudation. One of these occurred in the practice of my partner, Dr. Owen, and recovered, but was paralyzed for a long time afterwards. The other was in my own practice. No treatment was of any avail, and the child died suddenly.

I saw a case of my partner's in which, after vaccination, the sore became diphtheritic, and which failed to improve under either constitutional or local treatment. He desired to go to Virginia, to which we consented; we have since learned that he became paralyzed.

I saw a very melancholy case in the person of a young lady who, while standing before a fire, got her dress on fire, and was severely burned on the legs. The burn on one leg was quite deep, and the skin sloughed off, leaving a raw surface which I hoped would speedily heal. But alas, it did not. It became covered with a pseudo-membranous deposit, grave constitutional symptoms set in, with want of appetite, and fever, and finally irritability of stomach, constant vomiting, collapse and death. The urine in this case was examined and found heavily loaded with albumen.

Many illustrative cases could be cited from the practice of medical friends to prove to the general practitioner that he should ever be on the alert when there is an epidemic prevailing; and ever to bear in mind the maxim of Trousseau—"A knowledge of the specific element in disease is the key of medicine, without which it is impossible to proceed successfully in the practice of our art."—*Clin. Med., vol. III, page 18, Syd. Ed.*

NOTE B.—TYPHO-MALARIAL FEVER.

We find in the tables of mortality one death ascribed to *typho-malarial fever*, a name which I believe to be false and misleading. In 1867 I read a paper before the Mobile Med-

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ical Society, in which I discussed the claims of this new fever to a place in our recognized nosology. Since that time it has not been so common amongst us; but since it has not disappeared altogether, I have thought it would not be amiss if I addressed my criticism to a wider audience. It is as follows:

During the last six months several cases of protracted fever, primarily of malarial origin, but assuming in their course certain typhoid symptoms, have been related to the society under the name of *typho-malarial fever*. In the discussions which have followed the relation of these cases, it has been made evident that some at least of the members of the Society consider this form of fever to be a hybrid malady, generated in the system of its victim by the conjoint influence of two distinct poisons—the poison which produces malarial fever, and the poison which produces typhoid fever. I have all the time objected to the name typho-malarial, and to the theory which has given rise to it, as being at variance with all sound pathology and rational nomenclature. In my adverse arguments I have relied chiefly on two fundamental propositions.

My first proposition is, that no such monstrous hybrid as this supposititious typho-malarial fever could be brought into the world here in Mobile, because the conditions necessary for its generation do not exist here. It is evident that every hybrid child must have both a father and a mother. In the case of typho-malarial fever the malarial mother is easily found, the fruitful mother of many children; but for the typhoid father I have looked in vain through all the streets and alleys in all the wards and suburbs of the city.

In reply to this argument, gentlemen have insisted that, whatever may have been the facts of my own experience, it is still certain that typhoid fever is not an unknown malady in Mobile; and that the father of the monster is as certainly native here as is the mother. "If," say these gentlemen, "a continued fever, with diarrhœa, dry tongue, frequent delirium, a rose rash, running a persistent course of three weeks or more, and defying all treatment to arrest its progress,—if a

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fever presenting all these characters is typhoid fever, then beyond doubt is typhoid fever indiginous in Mobile."

Of course, I can not fail to see the strength of a position like this. There is no argument effective against a fact; and notwithstanding it is true, that there are more false facts in the world than false theories, still for the time the fact, real or presumed, is always triumphant. But *tempora mutantur et nos mutamur in illis;* and the fact of to-day is very often the exploded delusion of to-morrow. I can only continue to say that if we have typhoid fever here I have never seen it.

My second proposition admits, if not of ampler vindication, at least of far more learned and abstruse discussion. I hold, in briefest terms, that the abnormal conjugation of two distinct etiological poisons for the production of a hybrid disease, is impossible and absurd in the very nature of things.

I know that the contrary opinion—the doctrine of hybridity in disease—has been held by many of the great men who have made the profession of medicine illustrious. I know, for example, that Hildenbrand, Patterson, Copland, Kuttner, and Heim have described a disease which they consider to be a true hybrid of measles and scarlet fever, and that Aitkin devotes to it in his great work on practice a special section under the name of rubeola. I know that many physicians in various parts of the United States have, like my medical friends in Mobile, given ready credence to the typho-malarial theory which was suggested by Surgeon Woodward of the United States Army in explanation of the famous Chickahominy fever. But for all these honorable names, and graphic descriptions, I am not convinced. It may be that my skepticism is very unreasonable; but a great deal of what passes for argument in this clever world reminds me of the method by which the credulous old lady of a popular anecdote undertook to establish the existence of the devil. "No devil, indeed," exclaimed she indignantly to a disciple of Hume and Voltaire, "a pretty tale to tell a woman of my age. Haven't I seen a picture of him in the bible? And I should like to know how they could make a picture of the devil if there

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wasn't any devil at all, at all?" And the old lady tossed her head in triumph; and might have quoted, if she had been a reader of Hudibras, the famous couplet,

> "For optics sharp it takes, I ween,
> To see what is not to be seen."

Poor honest old soul! not to know that most of the things which have been seen in this world are mere phantoms of the imagination, without so much affiliation with real substance as even shadows have!

But let us look at this question a little more closely; let us see what sort of mental conception we can form of this hybrid typho-malarial fever. By what fateful conjunction of malgnant planets was it begotten? By what strange perversion of nature does it find in the world a local habitation and a name? Have the two poisons, the typhoid poison and the malarial poison, in monstrous embrace begotten a third poison—the typho-malarial poison, which finds its way into the human system, and fulfills its evil destiny by the production of a hybrid fever—the new fever called typho-malarial fever? Or do the typhoid poison and the malarial poison enter the system together in pestiferous partnership, and by their conjoint energy generate a fever that is neither typhoid nor malarial, but a mixture of both?—a fever which proclaims its existence by a double set of symptoms during the life of the patient, and by a double set of pathological lesions after the patient's death?

In my medical creed, malarial fever is, in the strictest sense of the words, a specific fever, generated in the human system by a specific poison, advertised by specific symptoms, marked by specific lesions, and amenable only to specific treatment. In like manner, I hold that typhoid fever is also a specific fever, the legitimate offspring of a specific poison, attended by a train of specific symptoms, characterized by specific lesions, and, in the nature of things, *curable* only by specific remedies, if, indeed, it should ever prove to be curable at all, which I greatly doubt.

It has been believed by many that all fevers are essentially

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of one nature, the various phases of febrile disturbance being ascribed to various perturbing circumstances and complications. In harmony with this doctrine, it has also been held that fevers may change their types—that one form of fever may pass into another form of fever—that, for example, malarial fever, through some legerdemain of pathology, can be transmuted into typhoid fever; or, as the common phrase is, that malarial fever can *degenerate* into typhoid. It is a doctrine, however, which I can by no means endorse; and I should, indeed, be sadly puzzled how to treat my fever patients if fevers were endowed with the protean faculty of being one thing to-day and another thing to-morrow. But plainly, if fevers have specific causes, this mutation is impossible. The same seed must always produce the same plant, to bear for our pleasure the same flowers, and for our use the same fruit. We do not gather figs of thistles, nor grapes of thorns. If typhoid is planted, only typhoid can be reaped. If we sow malarial seed, we can gather none but malarial fruit.

But if a genuine hybrid fever is inconceivable and impossible; and if fevers cannot change their types for the accommodation of careless diagnosticians, it may still be contended that two distinct fevers, as typhoid and malarial, may afflict the same human organism at the same time, both running through all their usual stages side by side, and presenting a double set of symptoms and a double set of lesions, "like," as Dr. Tracy hath it, "two friendly sojourners in separate apartments of the same tenement, without officious intermeddling or molestation of each other." This doctrine of the coexistence of two specific diseases in the same human body is not *prima facie* either absurd or impossible. Examples enough can be found scattered through medical books and periodicals; and the testimony of a cloud of witnesses of reputable name can be adduced in support of it. Among these, I may mention the names of Diemerbroeck, De Haen, Ring, Williams, Gregory, Beaudelocque, Walsh, Mearson, Goodfellow, McBride, Russell, Tracy, Willan, Jenner, Cop-

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land, Saunderson, and Landouzy. But while I will not venture to doubt that such examples may have been occasionally seen, I must still be allowed to believe, that in reality they are of extremely rare occurrence; and that a very large majority of the cases so reported are more truly cases of mistaken diagnosis.

The exact diagnosis between fevers of the same class is not always easy, as may be strikingly shown by some familiar facts in the medical history of the eruptive and the continued fevers.

In the beginning of the tenth century, the era of Rhases, Avicenna, and the Arabian School, the belief in the specific identity of small-pox, measles, and scarlatina, was universal. Scarlatina was first recognized as a separate malady during the latter half of the sixteenth century. Small-pox and measles were confounded together for more than two hundred years longer, their specific differences having been definitely established for the first time by Fothergill and Heberden, about 1750.

There are men now living who can remember the time when the four continued fevers, now recognized as distinct, namely, typhus fever, typhoid fever, relapsing fever, and febricula, were all regarded as mere varieties of a single species. The first step towards their separation grew out of the dissections of Prost, in 1804. The second step was taken by Louis, in 1829, when he established, in his celebrated treatise, the constant presence in the Parisian fever of lesions of the glands of Peyer. But the doctrine of the specific diversity of these fevers still made slow progress, and was not fully established until the publication of the observations of William Jenner, in 1846, made further doubt almost impossible. Finally, the masterly summing up of all the evidence in the case by Dr. Parks, in 1851, settled the dispute forever.

Admitting, however, without too much curious inquiry into the weak points of reported instances, that two specific fevers may at the same time infest the same body, this view affords no aid to the advocates of the typho-malarial doctrine. It is

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not two fevers raging together which they profess to describe, but a single compound fever. See, in proof, the definition of Dr. Meredith Clymer, in one of the supplementary articles to the American edition of Aitkin. He is avowedly following Woodward, the author of the theory and of the name; and he says:

"TYPHO-MALARIAL FEVER.—An idiopathic fever of mixed type, caused by a combination of palludal and pythogenetic influences, with marked remissions and exacerbations at the beginning, and, after a variable period, becoming continuous; attended with early prostration, diarrhœa, and subsequently, extreme adynamia; the characteristic lesion is enlargement and ulceration of the solitary intestinal glands."

Now, I should like to know where is the typhoid fever, the specific typhoid of Louis and Jenner, in this definition. There are no rose spots, and no lesion of the glands of Peyer—not one of the pathognomonic symptoms of typhoid. By what right, then, is it assumed that the typhoid poison has anything to do with it? As to the so-called typhoid symptoms represented by the phenomena of stupor, muttering delirium, general prostration, *subsultus tendinum*, dry mouth, deafness, singultus, *et cetera*, these are of no diagnostic value, since they may group themselves in a similar manner, not only in typhus and typhoid fevers, but also in pyæmia and septicæmia, in some forms of pneumonia, in many cases of acute phthisis, and in a large class of malarial maladies.

In further elucidation of my position, I beg leave to read here an extract from a paper of mine on Camp Fever, which was written during the second year of the war, in which I discuss, incidentally, this same question of the hybridity of disease, and with reference to this same typho-malarial theory of Dr. Woodward. The passage which I desire to quote is as follows:

"Dr. Woodward applies to it the compound name of typho-malarial, under the belief that it is a hybrid malady, generated in the system by the conjoint action of the malarial poison and the pythogenetic poison. He recommends qui-

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nine as the principal remedy; but at the same time distinctly states, that quinine, no matter in what quantities given, nor in what stage of the disease, is in no case able to arrest the febrile movement.

"The doctrine of the hybridity of diseases, which is involved in Dr. Woodward's theory, is a novel subject of medical inquiry, which no well-established facts can be brought to sustain. All the facts of medical science, indeed, are on the other side; and all the theoretical principles of medicine are in contravention, not only of the probability, but of the possibility, even, of this hypothetical conjugation of diverse etiological poisons for the generation of a hybrid malady. It is not even certain that two idiopathic fevers, or two constitutional diseases of any kind, can simultaneously infest the same animal organism. It is true that there is no *a priori* impossibility that two, or even more than two, constitutional diseases, which affect exclusively different parts, or different tissues, or different functions, may coexist in the same body. It is conceivable, for example, that we might find a man sick of remittent fever, with a chancre on the genitals, a vaccine vesicle on the arm, and tubercles in the lungs, and thus afflicted with four constitutional diseases at once. From this living fountain of diseases, chancre might be communicated to one man, vaccinia to a second, and if the theory of the inoculability of tubercle is true, tuberculosis to a third. And there would be no fear that the tubercular matter would communicate either syphilis or vaccinia; or that the syphilitic matter, or the vaccine matter would communicate either of the other two diseases. Like begets like. A chancre elaborates the virus of syphilis, and no other; and the vaccine vesicle, even on a syphilitic subject, transforms everything that it appropriates into it own nature, and suffers no syphilitic taint. Plants furnishing the most useful aliments, the most virulent poisons, and the most potent medicines, grow out of the same soil, and feed on the same food. The bee sucks honey, and the spider distils venom, not because one

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of them feeds on flowers, and the other on flies, but because nature has endowed them with these different faculties.

"The abstract, possibility, then, of the coexistence of two or more systemic diseases in the same system, when these diseases affect exclusively different tissues or different functions, may be conceded. But it still admits of question, even in the face of the long catalogue of adverse cases which Dr. Murchison has culled out of English, French, and German reports, which is published in the British and Foreign Medico-Chirurgical Review for July, 1859, whether any such malevolent association of idiopathic fevers deserves to be admitted among the established facts of practical medicine. However this may be, there can be no doubt whatever of the truth of John Hunter's general doctrine, that 'no two of them can exist in the same part of the body at the same time.'"

APPENDIX.

I add here, with the hope that it may be of some assistance to those engaged in the preparation of health-laws for our cities, the draft of a Health-Ordinance which was prepared by the Board of Health for the Municipal Authorities of Mobile. It was under discussion for several weeks, and was then passed into a law in such a mutilated state that the Board of Health refused to accept its provisions. This led to a reconsideration on the part of the Municipal Authorities, in the course of which the more objectionable of the amendments that had been made were rescinded, and the ordinance assumed such a shape that the Board of Health was able to accept it without any sacrifice of self-respect.

The history of this contest between the Board of Health and the Municipal Authorities of Mobile is sufficiently curious and instructive, but, for various reasons, I shall not undertake its rehearsal here. It is enough to say that it would reflect honor upon the Board of Health, who finally obtained substantially everything which they had contended for. In these various mutilations and restorations, the symmetry and excellence of the ordinance suffered some impairment, and I therefore prefer to present it in its original form.

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AN ORDINANCE

To be entitled An Ordinance to secure the Public Health.

ARTICLE I.—THE BOARD OF HEALTH.

Sec. 1. *Be it ordained, by the Mayor, Aldermen and Common Council of the City of Mobile,* That it shall be the duty of the Board of Health of the City of Mobile, organized under the provisions of an act of the General Assembly of the State of Alabama, incorporating the Mobile Medical Society, passed in the year 1843, and renewed in 1866; and also in accordance with the act of the General Assembly passed at the extra session in February, 1875, establishing Boards of Health in the State of Alabama: To supervise the administration of all the health laws of the city; to examine into all cases of malignant, pestilential, infectious and epidemic diseases which may occur in the city, and the causes thereof; to examine into all such nuisances as may tend to endanger the health of the city, and take such steps as may be necessary for their removal; to exercise a general supervision over the sanitary regulations of all municipal institutions, including hospitals, markets, asylums, prisons, and public schools; to superintend all matters pertaining to quarantine and the Quarantine Physician, and direct all measures of detention, disinfection and purification of vessels, cargoes and passengers coming from ports against which quarantine may have been proclaimed.

Sec. 2. *Be it further ordained,* That whenever it shall appear to the Board of Health that any pestilential or infectious disease has made its appearance in the city, said board shall take such measures as to them may seem expedient and nec-

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essary to prevent the spread of such disease; and any person failing to comply with the requirements of the Board of Health in such cases shall forfeit and pay such fine as the Mayor may impose, not exceeding fifty dollars; that no person laboring under any contagious, infectious or other disease dangerous to the public health, shall be removed from one place to another within the city limits without the permit of the Board of Health, under such penalty as the Mayor may impose, not exceeding fifty dollars.

SEC. 3. *Be it further ordained*, That it shall be the duty of every physician, or other person practicing medicine in the city of Mobile, to report to the Board of Health every case of small-pox, yellow fever, or other infectious, contagious or pestilential disease which he may be called upon to treat within the city limits, said report to be made within twenty-four hours after he shall have ascertained the character of the case, and to specify the name of the patient and the locality of the house in which he is to be found; and for every violation of this provision the guilty party shall forfeit and pay such sums as the Mayor may impose, not exceeding fifty dollars.

That every citizen upon whose premises there may occur any case of small-pox, yellow fever, or other infectious or pestilential disease, not under the charge of any physician, shall in like manner report the facts to the Board of Health, under such penalty for failure so to do as the Mayor may impose, not exceeding fifty dollars.

But, whenever any disease has become epidemic, the Board of Health may, at their discretion, declare it unnecessary to report further cases.

SEC. 4. *Be it further ordained*, That whenever, in the opinion of the Board of Health, the services of the City Engineer, of the City Attorney, or of the Street Commissioner, shall become necessary for the furtherance of the sanitary interests of the city, such services shall be rendered on the requisition of the Board with the approval of the Mayor.

That whenever, in the opinion of the Board of Health, it

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becomes advisable for the furtherance of the sanitary interests of the city to have the assistance of the police, they shall make application to the Mayor, stating the number of police-men required, the purposes for which they are required, and the probable length of time for which they may be needed, and if the Mayor approves the application, he shall order the necessary detail to be made and placed for the time being under the orders of the Board of Health.

SEC. 5. *Be it further ordained,* That the Board of Health, at their first regular meeting after the first Monday in March of the present year, or as soon afterwards as practicable, and also at the first regular meeting after the first Monday in March of every second year thereafter, shall proceed to elect a Health-Officer, said election to be subject to the approval of the Mayor; that the Health-Officer so elected shall hold his office for the term of two years from the time of entering upon his duties, or until his successor is duly elected and installed; that the Health-Officer shall receive such salary as the city authorities may from time to time determine, to be paid as are the salaries of other city officers; that the Health-Officer may be removed at any time by the Board of Health, for inefficiency or neglect of duty; that whenever a vacancy shall occur in the office of Health-Officer, the Board of Health shall proceed to elect a new Health-Officer to serve for the remainder of the unexpired term, subject to all the conditions provided in the preceding part of this section.

SEC. 6. *Be it further ordained,* That the Board of Health shall employ some competent person whose duty it shall be to act as Druggist to the City Dispensary, and to do the clerical work of the Board of Health; that said Druggist and Clerk shall be removable at the discretion of the Board of Health, and shall receive such monthly salary as the Mayor and the City Boards may from time to time determine, to be paid as are the salaries of other employees of the city.

ARTICLE II.—THE HEALTH-OFFICER.

SEC. 7. *Be it further ordained,* That the Health-Officer shall

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be the executive officer of the Board of Health, and, under the direction and control of the Board of Health, shall exercise a general supervision over the sanitary interests of the city; that he shall make a circuit of observation, at least once in every week, to every part of the city; that in all cases where he may discover the existence of any agent which might prove dangerous to the health of the city, he shall cause any ordinance in existence for its correction to be enforced; that if there be no ordinance in existence competent to the correction of the evil, he shall make a full report of all the attending circumstances to the Board of Health, accompanied with his opinion of the necessity of extraordinary or special action; that he shall make diligent inquiry into all cases of malignant, infectious or contagious disease which may occur in the city, cause immediate measures to be taken to arrest their progress, and report the facts to the Board of Health; that if he shall have cause to suspect the existence of any nuisance, or of any case of infectious or pestilential disease in any house or enclosure, he may demand entry into such place at any time between the rising and the setting of the sun; and if the owner or occupant shall refuse or delay to open the same and to permit a free examination to be made, he shall forfeit and pay for every such refusal such sum as the Mayor may impose, not exceeding fifty dollars; that he shall keep on hand at all times, so far as possible, a supply of reliable vaccine virus, which he shall furnish to the physicians of the city, free of charge; that he shall also vaccinate all indigent persons who may apply at the Health-Office for that purpose; that he shall specially take measures to secure the vaccination of all unvaccinated persons dwelling within the vicinity of any house in which small-pox may exist; and if any person so exposed to small-pox shall refuse to be vaccinated, such person shall forfeit and pay for every such refusal such sum as the Mayor may impose, not exceeding fifty dollars; that he shall, during the existence of quarantine, visit the quarantine station from time to time, and see that the requisite measures for securing the purposes of quarantine are

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effectually carried out; that he shall keep at the Health-Office a book of complaints, in which any police-officer, or any citizen, may enter on record a report of any nuisance supposed to affect health which he may have observed, stating therein the locality and nature of the nuisance; that if any difficulty should arise in the removal of such nuisance, he shall make personal examination into the facts, and see that measures are taken to have the laws in relation thereto properly executed; that he shall give to the prisoners in the city guard-house whatever medical and surgical attention they may stand in need of.

ARTICLE III.—THE REGISTRATION OF DEATHS AND BIRTHS.

SEC. 8. *Be it further ordained,* That the Health-Officer shall keep a book, to be entitled "The Register of Deaths," in which he shall make a registration of all deaths occurring in the city, under such regulations as may be prescribed by the Board of Health; that he shall supervise all certificates of death, to see that they are properly made out—the form of the certificate and the nomenclature of the disease to be such as may be prescribed by the Board of Health; that if the certificate is in proper form, he shall issue a permit authorizing the removal or burial of the body of the dead person; and without such permit no person who may die in the city of Mobile, shall be removed or buried by any sexton, undertaker, or other person, under such penalty as the Mayor may impose, not exceeding fifty dollars; that if the certificate of death is in any way defective, he shall return it to the physician signing the same, for correction; and any physician failing or refusing to give such certificate in proper form shall be liable to such penalty as the Mayor may impose, not exceeding fifty dollars; that in all cases of death in which no adequate certificate can be obtained from a physician, the Health-Officer shall investigate the circumstances and make out the certificate required; except in such cases as may require the intervention of the Coroner, when that officer shall be duly notified; that no dead body of any deceased person

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shall be brought into the city of Mobile from any other place, unless it is accompanied by a proper certificate of the cause of death; and if the death was caused by small-pox, yellow fever, or any other infectious or pestilential disease, not unless the permit of the Board of Health has been first obtained, under such penalty as the Mayor may impose, not exceeding fifty dollars.

Sec. 9. *Be it further ordained*, That every physician and midwife, and every other person who may attend any case of midwifery, within the limits of the city of Mobile, shall make to the Health-Officer a report of every such case within one week after the date of the occurrence, specifying the names of the parents, the date of the birth, and the sex and color of the child, under such penalty for failure so to do as the Mayor may impose, not exceeding fifty dollars; and these reports shall be recorded by the Health-Officer in a book to be kept for that purpose, and to be entitled, "The Register of Births."

ARTICLE IV—THE CITY HOSPITAL.

Sec. 10. *Be it further ordained*, That the Health-Officer shall examine all persons who make application for admission into the City Hospital, and shall give permits to such as he may find entitled to receive the benefits of that institution; that is to say, to such as require such medical treatment as cannot be given at the City Dispensary, and are at the same time fit subjects for public charity. That the Health-Officer shall visit the City Hospital in company with the Hospital Committee of the City Boards whenever the said Hospital Committee desires him to do so; and shall make such inspections and examinations as said Hospital Committee may require. That the physician of the City Hospital, or other person in charge of the books and records of the City Hospital, shall make to the Board of Health a weekly report, to contain the following items, namely: the name of every patient received into the Hospital, the date of admission, the name of the disease or injury for which he may be treated, the result of the treatment, the termination

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of the case, the date of discharge or decease, as the case may be, together with such other details as the Board of Health may require. That the Health-Officer shall keep a book, to be entitled, "The Register of the City Hospital," in which shall be registered the following items, namely: the name of every patient admitted into the Hospital, together with age, sex, color, nationality, the name of the disease, where contracted, and when contracted, the date of admission into the Hospital, the date of discharge from the Hospital, and whether discharged by recovery, by death, or for some other cause, together with any additional details which the Board of Health may require.

ARTICLE V—THE CITY DISPENSARY.

Sec. 11. *Be it further ordained*, That a City Dispensary shall be established, to be under the direction and control of the Board of Health, and the supervision of the Health-Officer, at which the sick poor of the city who are not proper subjects for admission into the City Hospital, may receive medicines and medical and surgical treatment free of charge; that this dispensary shall be located in the dispensary rooms of the Medical College, with the consent of the Faculty thereof, and on condition that the Faculty of said College shall furnish at regular and stated hours of the day, and on every day of the week except Sunday, all the medical and surgical attendance that may be necessary to accomplish the object intended; that it shall be furnished with medicines at the expense of the city on requisitions certified by the Health-Officer, and approved by the President of the Board of Health and the Mayor; that the Health-Officer shall keep a book, to be entitled, "The Register of the City Dispensary," in which there shall be made a full record of all persons who may receive dispensary aid, specifying dates, names, ages, sexes, colors, nationalities, descriptions of diseases or injuries, character of treatment, and results of treatment when known.

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ARTICLE VI—THE CITY PEST-HOUSE.

Sec. 12. *Be it further ordained*, That the City Pest-House shall be conducted under the direction and control of the Board of Health, and the supervision of the Health-Officer; and care shall to taken to keep the buildings in proper repair and ready for reception of patients; that whenever, in the judgment of the Board of Health, it becomes necessary to open the Pest-House for the reception of persons afflicted with pestilential or contagious diseases, the Board of Health shall communicate the fact to the Mayor, together with such recommendations as the occasion may seem to require; that if the Mayor grant the requisite authority, the Board of Health shall proceed to employ a physician to the Pest-House, together with such other attendance as may be needed; to procure all necessary supplies; and to prescribe the necessary rules and regulations for its efficient management; that the Health-Officer shall keep a book, to be entitled, "The Register of the City Pest-House," in which shall be registered the names, ages, sexes, colors, nationalities, diseases, dates of admission, dates of discharges, deaths, and recoveries, together with such other details as the Board of Health may think proper.

ARTICLE VII—REPORTS, ETC.

Sec. 13. *Be it further ordained*, That the Health-Officer shall make to the Board of Health regular weekly reports of all the business done in connection with his office, including the report of the sanitary condition of the city, the report of births and deaths, the report of the City Dispensary, the report of the City Pest-House (when that institution is open for the reception of patients), together with such other information as the Board of Health may require. That the Board of Health shall make to the Mayor and Municipal Boards, on the first of every month, a full report of the operations of the Health Department for the preceding month, said report to include a summary of the weekly reports of the Health-Officer, together with such other information and such recom-

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mendations as to the Board of Health May seem advisable. That the Board of Health shall also make to the Mayor and the Municipal Boards, about the first of every year, a full report of all the operations of the Board for the preceding year, said report to include the vital and sanitary statistics of the city, together with such other information as to the Board of Health may seem advisable.

Sec. 14. *Be it further ordained*, That the Board of Health shall make no expenditures, except such as may be authorized by existing ordinances, or such as may be authorized, from time to time, by special action of the Mayor, or of the Municipal Boards.

Sec. 15. *Be it further ordained*, That all ordinances and parts of ordinances conflicting with the provisions of this ordinance, be, and are hereby repealed.

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PRIZE ESSAY.

Medical Association of the State of Alabama.

At the Annual Session of this Association, held at Montgomery during the second week in April, 1875, Dr. S. D. Seelye, of Montgomery, after some remarks regarding the increasing frequency with which cases of Bright's Disease are brought under medical care in this section, the unsatisfactory though extensive literature of the subject, and the generally fatal prognosis which we are obliged to give, rendering it one of the opprobia of the profession; and believing that there is still some hidden light that may be made to illumine the subject if attention and inquiry are turned especially to it, proposed to place in the hands of this Association a prize of one hundred dollars for the best treatise on this disease, under the following regulations, viz:

1st. Competition for the Prize to be open to the whole country.

2d. A committee to be appointed to adjudicate upon the essays presented.

3d. All essays to be forwarded to the chairman of said committee on or before the first day of February, 1876, and to be accompanied by a sealed letter containing name and address of the author, which letter shall not be opened until after the adjudication is made.

4th. The Prize Essay to be the property of this Association, and to be published in its Annual Volume of Transactions; and all unsuccessful papers to be returned to the address of the authors; honorable mention being made of any deemed of especial merit.

5. If none of the Essays presented are deemed worthy of the prize, the committee shall have the privilege of rejecting all, in which case the competition shall be open for another year.

6th. The prize shall be one hundred dollars in currency, with a certificate of this Association, suitably inscribed, and bearing the seal of the Association; or it will be wrought into a Gold Medal or Plate, with a suitable legend, and a fac-simile of the seal of the Association engraved thereon, to be of the full value of one hundred dollars, less the price of manufacture, at the option of the successful author.

7th. The adjudication shall be publicly announced at the next Annual Meeting of the Association, to be held at Mobile during the second week in April, 1876.

The above proposition having been accepted by this Association, it now invites

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from the thinkers and investigators of the profession at large the generous competition which its author invokes.

COMMITTEE OF ADJUDICATION.

Dr. JEROME COCHRAN, Mobile, Ala., Ch'n; Dr. J. B. GASTON, Montgomery, Ala.
Dr. W. H. ANDERSON, " " Dr. PETER BRYCE, Tuskaloosa, "

BENJ. H. RIGGS,
Sec. M. A. S. A.,
SELMA, ALA.

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The next Annual Meeting of the MEDICAL ASSOCIATION OF THE STATE OF ALABAMA will be held at Mobile, on the second Tuesday in April, 1876, at 12 o'clock M.

Each County Society is entitled to send TWO DELEGATES.

The assessment upon the County Societies is ONE DOLLAR for each member, exclusive of COUNSELLORS and DELEGATES, the former of whom pay the one fee of .ten dollars, and the latter five dollars.

The Secretaries of the respective Societies are requested to transmit to the Secretary their reports under Art. LXVIII, Sec. 14, Constitution, before the first Tuesday in April.

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